STUDY OF IMPACT OF MATERNAL PRE PREGNANT OBESITY ON MATERNAL AND FETAL OUTCOME

DISSERTATION SUBMITTED FOR

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CHENNAI, TAMILNADU

CERTIFICATE

This is to certify that this dissertation titled **"STUDY OF IMPACT OF MATERNAL PRE PREGNANT OBESITY ON MATERNAL AND FETAL OUTCOME"** submitted by **DR. MOOGAMBIGAI.K** to the faculty of Obstetrics and Gynaecology, The Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the requirement for the award of MD degree Branch II Obstetrics and Gynaecology, is a bonafide research work carried out by her under our direct supervision and guidance from November 2011 to October 2012.

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DECLARATION

I**, DR. MOOGAMBIGAI.K** solemnly declare that the dissertation titled **"STUDY OF IMPACT OF MATERNAL PRE PREGNANT OBESITY ON MATERNAL AND FETAL OUTCOME"** has been prepared by me. This is submitted to **The Tamilnadu Dr. M.G.R. Medical University, Chennai,** in partial fulfillment of the regulations for the award of MD degree (Branch II) Obstetrics & Gynaecology. I also declare that this bonafide work has not been submitted in part or full by me or any others for any award, degree or diploma to any other university or board either in India or abroad.

Place: **DR. MOOGAMBIGAI.K**

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INTRODUCTION

Obesity is preventable but still remains one of the important unsolved problems world wide. It has become a world pandemic. Its association with pregnancy is associated with adverse maternal and fetal outcome. Prevalence of obesity worldwide is 15 to 20 percent and accounts for 2 to 7 percent of total health care costs.

Obesity is an excess storage of triglyceride in adipose cells. It is excess of body fat. **Overweight** is a bodyweight including muscle, bone, fat & body water in excess of some standard/ Ideal weight. Definition of Obesity varies by authors and includes women who are 110 to 120 percent of ideal body weight or who have body mass index(BMI) more than or equal to 30.Most clinically relevant definition of obesity is from BMI.A person is obese when the amount of the adipose tissue is sufficiently high (20% or above of ideal body weight) to detrimentally alter biochemical & physiological functions & to shorten life expectancy. It is well documented that women have greater prevalence of obesity compared to men. Women have lower metabolic rate than men, even when adjusted for difference in body compositions & level of activity.

Determinants of overweight and obesity among women:

- Among individuals with less than high school education, prevalence of obesity was roughly twice that of college graduates.
- Low income households have high risk of obesity.

Maternal obesity not only increase risk of pregnant women during gestation but also it is risk for fetus and future health of child. Obesity in pregnancy is associated with multiple maternal complications like gestational diabetes, preeclampsia, increased rate of cesarean deliveries and its comorbidities like Postpartum haemorrhage, thrombo embolism. Fetal complications are fetal anomalies, macrosomia, increased rate of miscarriage, unexplained intrauterine death, perinatal death and long term complications like childhood obesity. Also evidence suggest it may be a risk factor for maternal mortality. Apart from pregnancy complications, it cause menstrual irregularities and infertility in woman of reproductive age group. Obesity also increase woman's risk of developing gallstones, osteoarthritis, ischemic stroke, colon carcinoma.

Healthcare professionals should aim to reduce proportion of obese women during reproductive period and educate the public regarding healthy lifestyle. ACOG recommend pre and inter conceptional

counselling regarding complications of obesity. Modern studies of obesity strongly indicate that it is a multifactorial problem and that lack of willpower & laziness is not the simple answer.

AIM OF THE STUDY

The aim of this study is to analyse the adverse maternal and fetal outcomes associated with obesity.

Factors analysed are

- MATERNAL COMPLICATIONS
  - Gestational diabetes
  - Pre eclampsia
  - Abruptio placentae
  - Postpartum haemorrhage
  - Cesarean section with its comorbidities
  - Thromboembolism
  - Infections
- FETAL COMPLICATIONS
  - Miscarriage
  - Fetal anomalies
  - Intra uterine death
  - NICU admission
  - Macrosomia.

REVIEW OF LITERATURE

Definition:

- Obesity is an excess storage of triglyceride in adipose cells. It is excess of body fat. Overweight is a bodyweight including muscle, bone, fat and bodyweight in excess of some standard or ideal body weight. (SPEROFF TEXT BOOK OF ENDOCRINOLOGY).
- According to National Heart, Lung and Blood Institute(1998),Obesity is body mass index of 30 kg/ meter squares or greater. Overweight is body mass index of 25 kg/meter squares to 29.99 kg/meter squares.

Methods of determining adiposity

i) Determining body fat by determining density of body by underwater measurement (hydrodensitometry) is the most accurate measurement. It is certainly not practical.

ii) Skin fold measurement by calipers is an index of body fat.

iii) Waist circumference.

iv) Body Mass index (Quetelet index) is ratio of weight divided by height in meter squared (kg/m2)

v) In most clinical settings and in epidemiological studies, body mass index is used to measure adiposity since it strongly correlated with fat mass measured by hydro densitometry.

Body Mass Index/Quetelet index (BMI)

Calculation of BMI

$$\text{BMI} = \frac{\text{Weight in Kilograms}}{\text{Height in Meter squares}}$$

Limitations of body mass index is that it does not account for differences in fat mass by race, ethnicity, Sex and Age.

Calculation of ideal body weight for an individual

(Height in centimeters – 100) X 0.9

Who Body Habitus Categories

BMI	Category	Risk of Developing Health Problems
< 18.5	Underweight	Increased
18.5 – 24.9	Normal	Least
25 – 29.9	Overweight	Increased
≥30	Obese	High to Extremely High

Classification of Obesity

(Freedman and Colleagues 2002)

BMI	Class	Risk of Developing Health Problems
30–34.9	Class I	High
35–39.9	Class II	Very High
≥40	Class III	Extremely High

ICMR BODY MASS INDEX CRITERIA

BMI	CLASS
<18.5	**Under weight**
18.5 – 22.99	**Normal**
23 – 24.99	**Over weight**
≥25	**obesity**

ICMR-BMI CRITERIA jointly released by ICMR, Health ministry,All India Institute Of Medical Sciences,Diabetic foundation of India,National Institute of Nutrition and 20 other health organizations.

Physiology of Adipose Tissue

Each cell of adipose tissue is a pack of triglyceride - the most concentrated form of energy - 8 calories/ gram of triglyceride.

- Adipose tissue is storehouse of energy.
- Fat serves as cushion from trauma.
- Adipose tissue play role in regulation of body heat.
- Energy demand in between meals which is not adequately met by carbohydrates is met by fat.
- It plays important role in regulation of sex hormones.

Mechanism of mobilizing energy from Dietary fat

Fat ingestion

↓

Breakdown by Gastric and pancreatic lipase

↓

Triglycerides and Free fatty acids

↓

Absorption in small intestiness

↓

Chylomicrons

↓

Liver

↓

Lipoprotein.

↓

Adipose tissue where Lipolysis by lipoprotein lipase

↓

Fatty Acids enter fat cells where it is stored as triglycerides.

Role of Glucose in Lipogenesis

- Glucose is the main source of glycero phosphate
- Glycero phosphate is required for re esterification of fatty acids and storage as triglycerides.
- Production and availability of glycero phosphate is rate limiting step in lipogenesis.

Metabolism Of Glucose And Fat

In FED State

When Person eats

↓

Glucose is available

↓

Insulin is secreted (Lipoprotein Lipase activity is inhibited)

↓

Glucose

↓

Glycero 6 phosphate

↓

Glycero phosphate stored as triglyceride.

↓

Fat is stored

In Starvation

Glucose level decreases

↓

Insulin decreases

↓

Fat is mobilized due to activation of lipoprotein lipase .

- Free fatty acids release from adipose tissue occurs during physical exercise, fasting, exposure to cold, nervous tissue, anxiety .
- Fat easily mobilised are from omentum, mesentry& subcutaneous fat. Difficult mobilization is from peri renal & retrobulbar fat. Low variable level of lipolysis occur continuously to provide body heat.

Etiology of Obesity

Modern studies of obesity strongly indicate that it is a multifactorial problem and that lack of willpower & laziness is not the simple answer.

Obesity is consequence of fat imbalance inherent in high calorie diets. If only single large meals are consumed, body learns to convert carbohydrates to fat quickly. Person who does not eat all day & then stocks up at night is promoting increase in fat.

Inherited aspects of Obesity

- Fat cells develop from connective tissue early in fetal life.
- In obese, mean fat cell volume is increased 3 fold.
- Hyper plastic type of obesity associated with childhood have poor prognosis.
- Hypertrophic type that is responsive to diet may occur in adults.
- Familial occurrence of obesity can be attributed in part to genetically related reduced rate of energy expenditure.
- After age 3, obesity in childhood predicts obesity in adulthood and parental obesity doubles the risk of adult obesity in both obese and non obese children.
- Extent to which genetic predisposition is expressed depends on environmental influences .Prevalence of obesity is inversely related to level of physical activity and education and directly related to parity.

Anatomic Obesity

- Gynoid obesity(pear shape) is one in which fat distribution is in lower body (femoral & gluteal region).
- Android obesity (apple shape) is one in which there is central body fat distribution.

Gynoid Obesity

- Gynoid store fat
- More sensitive to insulin
- Extraction & storage of Fatty Acids easily occur.

During pregnancy, lipoprotein lipase increases resulting in fat storage and increased hip and thigh's weight gain which is more resistant to mobilization and then it is difficult to get rid off .

Android Obesity

- Sensitive to catechol amines
- Easily deliver triglycerides.
- Associated with Hyper insulinemia, Impaired glucose tolerance, diabetes, increase in androgen production, decrease Sex Hormone binding globulin which results in increased free estradiol & testosterone.

- Waist circumference more than

  102cm in men (Indian men cutoff 90 cm) and

  more than 88cm in women (Indian women cutoff 80cm)
- Weight loss in women with lower body fat is mainly cosmetic whereas loss of central body weight is important for general health.

Genetic aspects of Obesity

- Appetite center present in hypothalamus (ventromedial nucleus) is the integrating center for appetite & hunger information.
- Destruction of Ventro medial nucleus results in loss of satiety signals leading to hyperphagia.
- Overeating and obesity, however not due to nuclear destruction but mainly due to destruction of nearby ventral nor-adrenergic bundle.

Signals to these CNS Center

Originate in

1. Peripheral tissue

   Taste - gate keeper for feeding.

   Taste signals sent through

   - Opiates
   - Substance P

- Cholecystokinin.

Satiety signals sent through

- Peptides from stomach and intestine
- Local neuropeptides
- CRH
- Neurotensin
- Oxytocin.

Control of food intake and energy expenditure is a complex process and no agent or system functions in isolation.

GENES RELATED TO OBESITY

Leptin and the OB Gene (LEP Gene in human)

Gene related to obesity in human - LEP gene

Gene product	Human chromosome
Leptin	Chromosome 7
Leptin receptor	Chromosome 1
Carboxy peptidase E	Chromosome 11
Phosphodiesterase	Chromosome 4
Agouti protein	Chromosome 20

Leptin

Greek word Leptos - thin.

Leptin is 167- aminoacid peptide secreted in adipose tissue, that circulates in blood bound to family of proteins and act on CNS that regulate behavior and energy balance.

Leptin in Obese People

Nearly all obese people have increased leptin levels due to LEP gene expression and partly due to greater production because of fat cells.

Higher levels of leptin in women suggest greater resistance to leptin, correlating with greater prevalence of obesity.

Congenital Leptin Deficiency

- 25% of obese human have mutation in leptin Receptor or LEP gene.
- Recessive inheritance
- Results in hyperphagia and obesity

Leptin Receptor

- Cytokine receptor family
- DB gene encode leptin Receptor.

- 3 major forms -
    i. Short form
    ii. Long form
    iii. Circulatory protein with extracellular domain

  Long form – high levels found in hypothalamus

  Short form – high levels in choroid plexus

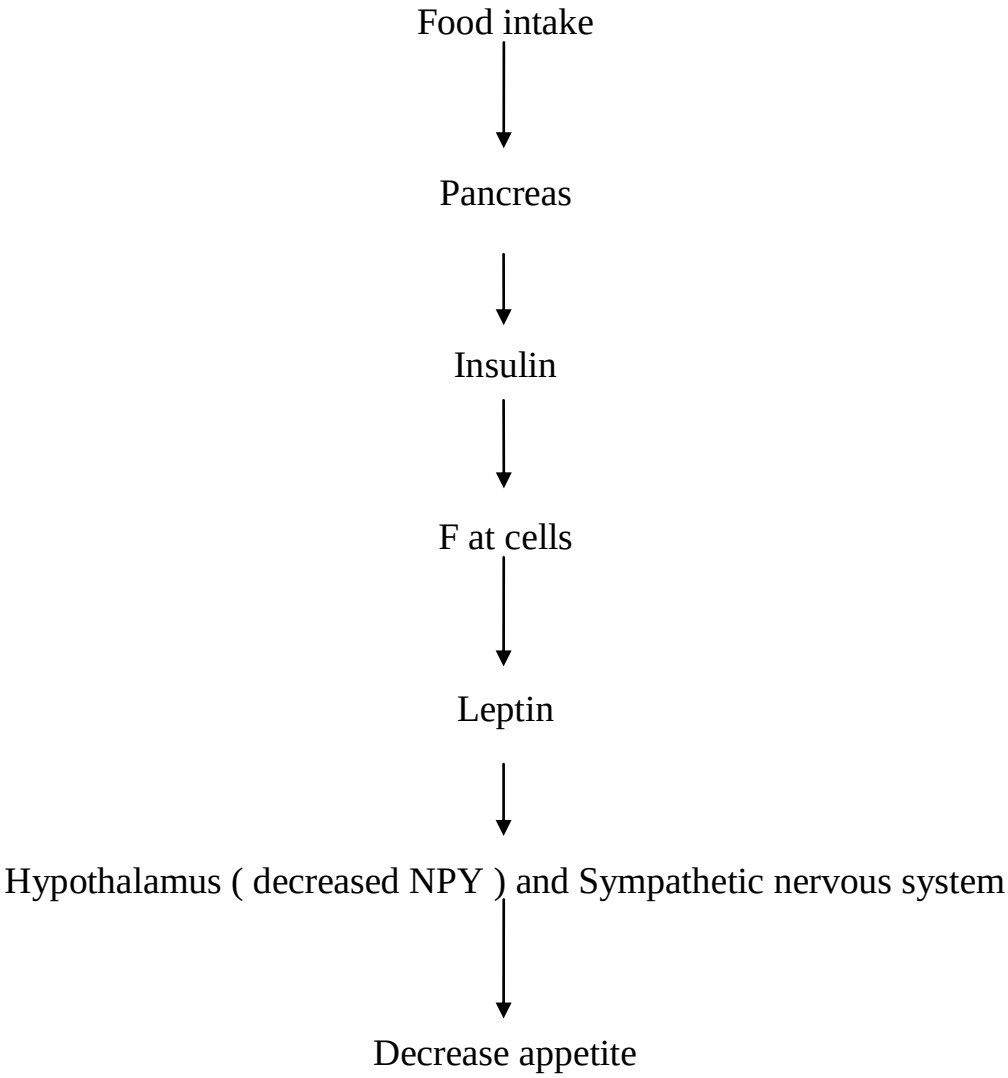
MUTATIONS INVOLVING GENES RELATED TO OBESITY

1. Carboxypeptidase E Convert proinsulin to insulin. Mutations involving carboxypeptidase E results in obesity but insulin sensitive.
2. Biology involving phosphodiesterase is not known.
3. LEP gene mutation results in obesity since leptin is not produced
4. LEP receptor gene mutation results in obesity which is not responsive to leptin.
5. Db gene mutation converts long form to short form resulting in leptin resistance & obesity.
6. Most common cause of familial human obesity attributed to single gene is melanocortin receptor gene mutation.

Physiological Feedback Loop : Energy expenditure depends on

- Basal Metabolic Rate.
- Diet and temperature induced heat production.
- Energy for physical activity

Fed State



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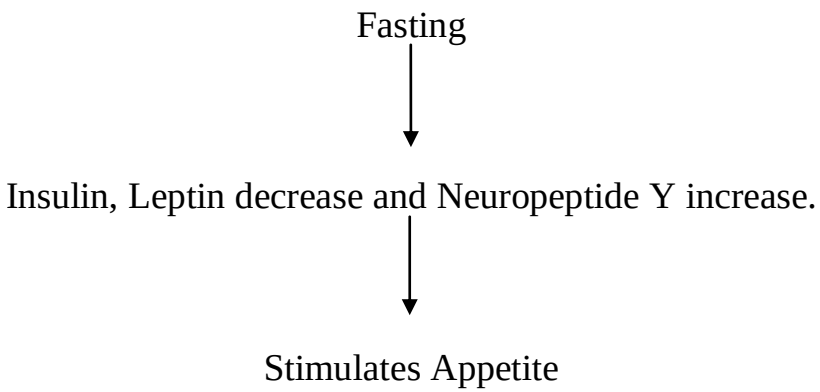


Other Gene Products Involved In Energy Balance

Ghrelin

- Stimulates release of growth hormone
- Regulation of food intake and energy metabolism
- Affects sleep and behavior
- Inhibits gonadotropin
- Expressed in ovaries and placenta

Ghrelin is 28 AA peptide synthesized mainly in stomach but also in other tissues like intestine, pituitary, hypothalamus, ovary, testis, kidney and placenta.

Ghrelin and leptin have opposite action.

- Ghrelin (only hormone) stimulate food intake.
- Circulating level of ghrelin is lower in obese, reduced with food intake and increased with fasting.

Adiponectin

- Polypeptide secreted by adipose tissue.
- Exert weight losing effect.

Genetic variation of adiponectin gene have been described that are associated with metabolic syndrome and Diabetes Mellitus.

Melanocortin

- Induce satiety.
- When melanocortin receptor is knocked off, appetite increase and results in obesity.

Why Weight Loss so difficult to maintain?

Weight loss

↓

Decrease in leptin and insulin, Increase in ghrelin.

↓

Increase in appetite and Decrease in energy.

↓

Short term weight loss

Sustained weight loss

1.Weight loss can be maintained only by strict diet control/increased physical activity to overcome body's attempts to restore original set point

2. Hormonal mechanism and energy adjustments to maintain lower body weight lead to new set points

Endocrine changes in Obesity

- Most important endocrine change in obesity is elevation of basal blood insulin level.
- Circulatory insulin level is proportional to volume of body fat.
- Overweight individuals are characterized by insulin resistance.
- Factors that affect insulin resistance are amount of fat tissues in body, calorie intake per day, amount of carbohydrate in diet, amount of daily exercise.
- Hyper insulinemia associated with obesity is reversible with weight loss in obesity.

OBESITY AND PREGNANCY

CONDITIONS SEEN WITH INCREASED FREQUENCY IN OBESE PREGNANT PATIENTS

Pre Conception

- Sub fertility

Ante Partum

1. Difficulty in detailed ultrasound examination during pregnancy
2. Pregnancy complications:
    - Miscarriage
    - Congenital anomalies
    - Gestational diabetes
    - Pre eclampsia
    - Obstructive sleep apnea.

Intra Partum

- Prolonged labour
- Shoulder dystocia
- Difficulty in endotracheal intubation for general anaesthesia
- Difficulty in placement of spinal or epidural catheter for regional anaesthesia.
- Special equipment needs(stretchers and wheel chairs)
- Cesarean delivery.

Post Partum

- Post partum haemorrhage
- Wound infections and breakdown
- Endometritis
- Venous thromboembolism
- Increased weight in off spring
- Increased risk of childhood obesity
- Possible difficulty with breastfeeding

Pre Conception and Obesity

Sub fertility

Adipose tissue is an endocrine organ. It stores lipid steroids like androgen. It plays important role in regulating sex hormones.

- ZAADSTRA et al[25] 1993 found association between central obesity and infertility.

- RICH EDWARD et al[26] 1994 found nearly twenty five percent of anovulatory infertility in UNITED STATES is related to overweight and obesity.

- LAKE et al[27] in 1997 and PAS QUALI et al [28]2003 found adolescent obesity is associated with menstrual disturbances like oligomenorrhea, amenorrhea and lenghthier menstrual cycles.

- Obesity is a risk factor for polycystic ovaries which result in chronic anovulation.

- SARWER et al [31]2006 found strong association between obesity and insulin resistance which results in subfertility.

Antepartum and Obesity

Pre Pregnancy Care

- Primary care services should counsel all women of child bearing age to achieve optimum weight before pregnancy.
- They should be made aware of increased risk of pregnancy complication associated with pregnancy.
- Possible ways to reduce the weight prior to pregnancy like healthy diet and exercise to be advised.
- Inter pregnancy weight reduction strategies to be advised to obese women during consultation regarding family planning and also regular monitoring of weight, BMI and waist circumference to be done.

- Inter pregnancy weight reduction in obese women reduces risk of Gestational diabetes by 40 %.

Nutritional Supplements suggested to Obese women prior to Conception

- Advised 5mg folate supplementation daily, starting one month prior to conception and continue in first trimester of pregnancy(RCOG recommendations in obesity in pregnancy).
- RASMUSSEN et al[24] 2008 found odd's ratio for neural tube defects in overweight is 1.22 , for obese is 1.70 and for morbid obesity, it is 3.11.
- BODNAR et al [47]2007 found obese women are at high risk to develop vitamin D deficiency.
- Advised to take 10 microgram vitamin D supplementation daily during pregnancy and also during breast feeding(RCOG recommendations in obesity in pregnancy).

Antenatal care

1. **Measurement of weight, height & body mass index(BMI)**

- All pregnant women should have their weight, height checked at antenatal booking visit and BMI calculated (ideally by 10 wks)

- For obese women, weight measurement done during the third trimester helps in planning for equipment & personnel required for labour and delivery.

2. Counselling during pregnancy

- Importance of healthy life style with regards to healthy eating & apt exercise to prevent excess of weight gain & development of gestational diabetes & pre eclampsia.
- ***Institute of Medicine (IOM) Recommendation of gestational weight gain by Pregravid BMI***

BMI	**Recommended Weight Gain(Kg)**
<18.5	12.5 to 18
Normal BMI – 18.5 to 24.9	11.5 to 16
Overweight BMI – 25 TO 29.9	7 to 11.5
Obese-BMI >30	5 to 9.1

- Adolescent Age Group should Strive to achieve upper end of Recommended Weight
- Short Statured(<157 cm) should strive for weight gain at lower end of recommended range.

- Also risk of developing preeclampsia, gestational diabetes and macrosomia to be explained and therefore importance of fetal and maternal monitoring to be stressed.
- Also problems that develop during labour and increased risk of cesarean deliveries and difficulty in anesthesia to be explained.

3. Assessment of Pregnancy Risk

- Booking BMI > 40 is associated with significant problems like difficulty in venous access, both general and regional anesthesia.
- BMI > 40 should be assessed in 3rd trimester by qualified professional regarding manual handling requirements like safe working loads of theatre tables, beds, lateral transfer equipment, appropriate size thromboembolic decompression stocking (TEDS)

4. Difficulties in Clinical Examination

- Fundal height measurements are difficult to measure.
- Fetal heart tones difficult to auscultate.
- Due to above reasons, increased surveillance to achieve routine tasks including early ultrasound for pregnancy dating, more frequent scans during pregnancy needed to monitor fetal growth.

- Blood pressure measurements with appropriate arm cuff size. Standard cuff size is12X23cm.
- Large cuff(15X33 cm) is useful in obesity.
- Level 2+ evidence in RCOG guidelines for obesity management in pregnancy suggest less error introduced while using too larger cuff than with too smaller cuff.

5. Difficulty in Ultrasound Examination

- Routinely,Fetal anomaly scan best done between 18 to 22 weeks due to better visualization of fetal structures.
- Anomaly scan in obese is better done between 20 to 22 weeks.
- Fetal anomaly scan largely depends on maternal size.
- Suboptimal visualization of structures seen when BMI more than 90^{th} percentile.
- Fetal structures sup optimally visualised are fetal heart, spine, kidney, diaphragm, umbilical cord.
- Difficult ultrasound is obese is further complicated by increased incidence of congenital anomalies.
- FIELD et al[22], 1995 found that >10% difference of birth weight from ultrasound estimated fetal weight in 30% of obese individuals.

- ANDERSON et al[12], 2005 found that risk of fetal anomaly in obese woman increase with increase in degree of obesity.

Pregnancy Complications

Miscarriage

- LASHEN et al[23] 2004 found odds ratio for spontaneous abortion in obesity is 1.2
- Odds ratio for recurrent early miscarriage is 3.5
- Also increased risk of miscarriage seen in those obese women who undergone IVF therapy.

Fetal anomalies

- Obesity is an independent risk for fetal anomaly. KING et al 2006 found developmental alterations in sensitive embryonic period in obese pregnant woman.
- Small increase in risk of fetal anomaly like oro facial, cardiac, neural tube defects. Odds ratio for structural birth defects in obese women when compared with normal counterpart is 1.3 to 2.1 (WALLER et al 2007).
- Comorbid conditions like diabetes also contribute to fetal anomaly.

- Due to maternal adiposity, difficult to image fetal anatomy and contribute to decreased sensitivity of ultrasound in anomaly screening.

Gestational Diabetes

Lipotoxity

Adipose tissue is considered an endocrine organ. It is the principal site of energy storage and secretion of adipokines. These adipose derived proteins are proinflammatory peptides and have adverse effect on glucose metabolism and insulin action. Raised free fatty acids (lipotoxicity) is implicated in acquired beta cell defect and progression of impaired glucose tolerance to diabetes.

Tumour necrosis factor alpha

One of the proteins formed by adipocytes. Produced in increased amounts in obesity. Increased amount down regulate GLUT-4 which are insulin sensitive glucose transporters in adipocytes.

Leptin

It is 16 KDa protein secreted from adipose tissue. It serves as marker of obesity and insulin resistance. Recent studies shown leptin

inhibits insulin secretion and has anti insulin effect in liver and adipose tissue.

Resistin

It is 10 KDa adipose tissue specific protein. It is named since it plays putative role in mediating insulin resistance in obesity.

Adiponectin

It is 30 KDa adipose tissue specific protein. This decrease insulin resistance in both muscle and liver. Low circulating levels is found in obesity. Decreased levels contribute to insulin resistance.

Mechanism of Insulin resistance initiated by Free Fatty Acid

Obesity

↓

Adipocytes

↓

TNF alpha

↓

Free fatty acids, leptin and other effectors

↓

1.Insulin resistance in peripheral tissue

2.Decrease insulin receptor kinase

3.Decrease post -receptor signalling.

- WEISS et al [21]2004 found odds ratio for obesity to develop gestational diabetes is 2.6 and for morbid obesity it is 4.
- ZHANG et al [20]2006 found inverse relation between level of vigorous activity and risk for gestational diabetes.
- DAVENPORT et al[18] 2008 found walking regularly for 25 to 40 minutes three to four times in a week decrease fasting and one hour post prandial blood glucose value with less insulin.

RCOG Recommendations[2] regarding Obesity and Gestational diabetes

- Level 2+ evidence indicates three fold increased risk of developing gestational diabetes in obese.
- Screening for gestational diabetes is in accordance with NICE clinical guideline 63 which suggest 2 hours oral glucose tolerance test between 24 to 28 weeks.
- All obese women with gestational diabetes offered oral glucose tolerance test 6 weeks after child birth.
- Regular follow up for development of type 2 diabetes for a period of 5 years.
- Annual screening for cardiac risk factors and healthy life style to be advised.

Pre eclampsia

- ROBINSON et al[32] 2005 found odds ratio to develop
- preeclampsia is 2.38.
- Obesity is associated with increased complication associated with pre eclampsia.
- Role of exercise is suggested to decrease incidence of preeclampsia. Protective mechanisms when a person exercise is reduction and prevention of oxidative stress, enhanced placental growth and placental vascularity andvascular endothelial dysfunction is corrected.

RCOG recommendations[2] for Obesity and pre eclampsia

PRECOG 2004 (Pre eclampsia community guideline)

1) Women with pre pregnant BMI of 35 and above with additional one risk factor referred to specialist care

   Additional risk factors mentioned are

   - Primi
   - Previous history of pre eclampsia
   - 10 years and above from last child birth
   - 40 years and above of age
   - Family history of pre eclampsia

- Booking diastolic blood pressure of 80 mm hg and above
- 1+ or more proteinuria on more than one occasion
- 0.3 g per day or above of proteinuria
- Multiple pregnancy
- Underlying medical condition like APLA, pre existing diabetes, hypertension, renal disease.

2) Women with pre pregnant BMI of 30 and above with no additional risk factors can have routine antenatal care at minimum of 3 weekly interval between 24 to 32 weeks and at 2 weekly intervel from 32 weeks on wards.

3) NICE clinical guideline on hypertensive disorders during pregnancy suggested that those women with more than one riskfactor for pre eclampsia may benefit from taking 75 mg aspirin starting from 12 weeks till birth of baby.

Intrapartum and Obesity

Labour and delivery

- BIARCO et al 1998 found an increased risk of slow progression of labour in obese women.
- SABIRE NS et al[4] 2001 and USHAKIRAN et al [5]2005 found increased risk of shoulder dystocia and emergency cesarean section. Also increased risk of developing postpartum hemorrhage.
- NICE clinical guidelines 55 recommends obese women with BMI of 35 & above should be offered care at specialist care unit & individual risk assessment to be done for planned place of birth.

1. Management during labour

- Obese women with BMI > 40 in established labour should be given continuous mid wifery care.
- Monitor uterine contractions & fetal heart rate.
- Venous access established early in labour.
- Active management of third stage of labour.

2. Monitoring during Labour

A. Fetal Monitoring

- Problems with transducing the fetal heart is noted with external transducers due to increased maternal pannus.

- There is no evidence to support for routine internal monitoring in obese woman in labour,but still internal monitoring is more effective.

B. <u>Uterine monitoring</u>

- MOYNIHAN et al[19] 2006 and ZHANG et al[20] 2007 found impairment and alterations of uterine contractility in obese woman.
- Manual palpation and external tocometry is also difficult in obese.
- Intra uterine pressure catheters may provide some advantage in uterine monitoring.
- EULIANO et al[35] 2007 found electro hysterography which is newer modality is superior to both tocodynamometry and intra uterine pressure monitoring.

3. Shoulder Dystocia and Macrosomia:

- SACKS et al[34] 2000 found although macrosomia is an important risk factor for development of shoulder dystocia, absolute risk of permanent impairment and death associated with shoulder dystocia is low

- USHAKIRAN et al [5]2000 and CEDERGREN et al[14] 2004 found increased risk of shoulder dystocia, dysfunctional labour, cesarean deliveries
- SHEINER et al[33] 2004 found that odd's ratio for increased risk of macrosomic babies in obese women is 1.4

4. Obesity and Cesarean Delivery

From study of EHRENBERG et al[17] in American journal of obstetrics and gynaecology 2002 and 2004, rate of caesarean delivery among overweight and obese is as high as 50%.

- Etiology is multifactorial.
- No satisfactory single explanation for failure of vaginal delivery.
- Amount of power generated by the uterus in the obese and non obese labouring women is equivalent .
- Degree of neonatal macrosomia alone cannot completely explain the elevated risk of caesarean section.
- Contribution of maternal pelvic fat to soft tissue dystocia leads to prolonged labour and increased rate of caesarean section.
- Main reason for increased cesarean section is slow progress of labour in overweight and obese.
- Co-morbidities associated with cesarean delivery are risk for postpartum haemorrhage, increased operative time, increased

postpartum wound infection and endometritis and need for vertical skin infection

- Once cesarean done,the risk continues.
- Postoperative complications include wound infections and breakdown, endomyometritis, venous thromboembolism, febrile hospital stay, delayed return to productivity.
- DIETZ et al[15] found late of cesarean section to be 14.3% for lean individuals(BMI<20)and 42.6% for obese (BMI>35)
- Also relative risk of cesarean without any other complications is 1.4 for overweight and 1.5 for obese.

Choice of skin incision

a. Pfannensteil Incision

Patient who is less centrally obese, Pfannensteil incision is preferred.

- ***Advantage***
  - This is more secure.
  - Allows more postoperative mobility.
- ***Disadvantage***
  - Proper exposure is difficult.
  - More amount of fat tissue is cut through.

- Postoperatively exposed to moist skinfold predisposing to infection and wound breakdown.

b. Vertical Skin Incision

Preferred in those who are more centrally obese

- ***<u>Advantage</u>***
  - Improved exposure and easy delivery with shorter operative time.
  - Cut through less fat and away from skin fold, so in event of wound breakdown, better wound care.

- ***<u>Disadvantage</u>***
  - Less secure since acted upon by lateral forces.
  - High risk of wound breakdown.

Antibiotic Prophylaxis and Subcutaneous Suturing (Nice clinical Guidelines No. 13)

- Obese women have increased risk of wound infection & therefore antibiotic prophylaxis to be given at the time of cesarean section.

- Also, above guidelines suggest that during LSCS, in those with more than > 2cm subcutaneous fat, suturing of subcutaneous tissue space will reduce the risk of wound infection & wound separation.

Need for Special Equipments

Operating tables to accomodate morbidly obese woman to be available and also adequate and appropriate surgical instrument for better visualisation and to operate on obese is available in hospital.

5. Vaginal birth after cesarean delivery

- DODD et al[16] 2004 found success rate of VBAC in obese is less than lean women.
- DURNWALD et al[17] 2004 found that in woman with BMI more than 29 kg/ meter squares, only 54 to 68% success rate found.

6. Thrombo Embolism

- EDWARDS et al [46]1996 found incidence of thrombo embolism to be 2.5% in obese woman.

RCOG Recommendations[2] for Thrombo Prophylaxis in obese woman

- Thrombo prophylaxis with low molecular weight heparin is recommended for obese woman for 3 to 5 days following vaginal delivery.
- Thrombo prophylaxis recommended before and also after cesarean section for 3 to 5 days.

Green Top Guideline 37 Suggest

1. Those obese women with two or more additional risk factors for thrombo embolism should be started on thrombo prophylaxis in antenatal period itself.
2. All woman with thromboprophylaxis in antenatal period should be continued on prophylaxis for six weeks postnatally along with postnatal risk assessment for thrombo embolism.

Weight Specific Dosage For Thrombo Prophylaxis[2]:

Weight (kg)	**DOSE**
91-130	60 mg Enoxaparin or 7500 units Dalteparin or 7000 units Tinzaparin daily
131-170	80 mg Enoxaparin or 10000 units Dalteparin or 9000 units Tinzaparin daily
>170	0.6 mg/kg/day Enoxaparin or 75 units/kg/day Dalteparin or 75 units/kg/day Tinzaparin daily

3. All obese woman advised early ambulation after delivery.
4. All morbidly obese women should be given postnatal thromboprophylaxis irrespective of the mode of delivery.
5. Also, women with BMI > 30kg/m^2 with 1or more additional risk factors for thromboprophylaxis should be given Low Molecular Weight Heparin for 7 days in postpartum period.

6. BMI> 30kg/m^2 with 2 or more additional risk factors for thromboprophylaxis should be managed with graduated compression stocking in addition to Low Molecular Weight Heparin.

Obesity and Perinatal Outcomes

Still birth and obesity

Reasons suggested for increased stillbirth in obese are

1. Decreased ability of obese women to percieve fetal movements.
2. Atherosclerosis in obese women due to hyperlipidemia which affects placental blood flow.
3. Increased incidence of sleep apnea which results in oxygen desaturation and hypoxia.

- HUANG AND COLLEAGUES [39]2000 found increased Unexplained fetal death is associated with obesity per se after adjusting for maternal age, diabetes and hypertension. Still birthrate is 240 times higher with obese when compared with normal weight women.
- CEDERGREN et al[14] 2004 found odds ratio for stillbirth is BMI > 35kg/m2 to be 2.79.

- ***Longterm complications:***
    - Taittonen et al[45] 1996 found increased risk of hypertension in children born to hypertensive mother.
    - Himmerman et al [36]1997 found that neonates born to hypertensive pregnant women have increased risk of developing impaired glucose tolerance.
    - Simmons et al [44]2005 found that 1 kg increase in birth weight in term infants is associated with 50% increase in risk to develop overweight in age group of 9 - 14 years. This is more in women who developed gestational diabetes.

Perinatal Morbidity

- STOTHARD AND COLLEAGUES 2009 found increased risk of variety of fetal and newborn congenital anomalies is associated with obesity. Neural tube defects are most commonly associated.

Contributing factors to perinatal mortality and morbidity in obesity

1. Chronic hypertension is associated with fetal growth restriction.

2. Diabetes is associated with birth defects, large for gestational age, macrosomia.

Postnatal Care and Follow Up

- Breast feeding initiation and maintenance rate is low among obese and therefore obese women should be advised about initiation and maintenance of breast feeding.
- Failure of oral contraceptive pills is more in women with obesity.(HOLT AND COLLEAGUES 2002).

Long Term complications of Obesity

- Type 2 diabetes, stroke, osteoarthritis, coronary artery disease, gall bladder disease, deep vein thrombosis, hypertension, obstructive sleep apnea, cancer endometrium, colon and breast, poor wound healing.

Treatment of Obesity

- Weight loss is difficult to achieve in obese. If achieved,it is difficult to maintain. Weight loss approaches include behavioral, surgical and pharmacological methods or combination of these. ACOG(2005)encourages obstetrician and gynaecologists in assessment and management of obesity in adults.

Surgical Procedures for Obesity[9]:

- Principles of surgical procedures is to reduce gastric volume and bypass gastro intestinal absorption.
- BUCHWALD et al 2007 ,in non pregnant women, it improves diabetes, hyperlipidemia, hypertension and obstructive sleep apnea.
- KINI et al 2007 found it also improves metabolic syndrome.
- Bariatric surgeries also improve fertility and reduce complications associated with pregnancy.

Various Surgical Procedures[9]:

Three commonly performed surgical procedures are

1) Vertical gastroplasty.
2) Gastric banding.
3) Roux en y gastric bypass.

Vertical gastroplasty:

- Using stapling device,narrow channel created through stomach.
- This small gastric pouch empties through narrow outlet into remainder of stomach.

- BILENKA et al (1995) analysed pregnancy outcomes following vertical gastroplasty and found that pregnancy complications are reduced.

Gastric Banding:

- Can be done as open procedure or laproscopically
- Adjustable band is placed 2 cm below gastro esophageal junction to create a small pouch.
- MARTIN et al 2000 studied pregnancy outcome following this procedure.
- Excessive nausea and vomiting associated with this procedure can be reduced by adjusting the band.
- DIXON et al 2000 studied pregnancy outcomes following lap banding and incidence of gestational hypertension and gestational diabetes are reduced.

Roux eny bypass:

- Mostly performed laproscopically.
- Gastro enterotomy proceeded by connecting pouch and proximal end of distal jejunum.

- Roux en y enteroenterostomy done 60 cm distal to gastrojejunostomy which allows drainage of unused stomach and proximal small intestine.
- WITGROVE et al 1998, found reduction in incidence of gestational hypertension and gestational diabetes and macrosomia.
- Serious complications are rare but intussusception can occur.

ACOG(2005) Recommendations for Pregnancy following Bariatric Surgeries[9]

1. All pregnant women should be warned of becoming pregnant following weight loss after surgery.
2. They should be advised not to become pregnant for atleast 12 to 18 months following surgery since this is the period of rapid weight loss.
3. Bariatric team should monitor pregnancy following gastric banding since adjustment of band needed during pregnancy.
4. Women should be monitored for nutritional deficiencies and vitamin supplementation given if needed.

MATERIALS AND METHODS

- This study done at GOVERNMENT RAJAJI HOSPITAL, MADURAI between NOVEMBER 2O11 TO OCTOBER 2012.
- Study enrolled 200 pregnant women with BMI of 25 and above and equal number of women with normal BMI and their Maternal and Fetal outcome are compared.
- Those with multiple pregnancy, history of pregestational diabetes, chronic hypertension, medical and endocrine disorders are not included in this study in order to reduce confounding factors.
- Demographic details like age, residential address, socio economic status, dietary lifestyle, exercise habits, education and employment status obtained by detailed history. Family history of obesity among their parents enquired.
- Body mass index(BMI) calculated from their weight and height recorded at their booking visit. BMI categorised according to WHO CLASSIFICATION.

Who Body Habitus Categories

BMI	CATEGORY
<18.5	Underweight
18.5 – 24.9	Normal
25 – 29.9	Overweight
≥ 30	Obese

Classification of Obesity

BMI	CLASS
30-34.9	CLASS I
35-39.9	CLASS II
≥40	CLASS III

- Blood pressure recorded with patient in sitting position, in their left arm, with appropriate size cuff.
- Gestational diabetes screening done using glucose challenge test at first booking visit and those with blood glucose more than 140mg% are subjected to WHO standards of 75 g oral glucose tolerance test.
- Postpartum haemorrhage is according to WHO definition of blood loss more than 500ml following vaginal delivery and more than one litre following cesarean section.
- Macrosomia is considered when birth weight more than 4kg.

Outcomes measured are

1. Maternal complications like preeclampsia, Gestational diabetes, postpartum haemorrhage, cesarean section rate, wound infection, respiratory infection.
2. Fetal complications like intrauterine death, macrosomia.
3. Also infertility rate and miscarriage rate are compared.

RESULTS

Table 1 : Patients age Distribution.

Age in Years	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Teenage	5	2.5%	--		4	2.5%
20-25	137	68.5%	22	53.7%	82	51.6%
26-30	49	24.5%	14	34.1%	57	35.9%
>30	9	4.5%	5	12.2%	16	10.0%
Total	**200**		**41**		**159**	

Table –1 Illustrates

- Among normal BMI group, 5 women belong to teenage group, **137 in age group of 20 to 25 years**,49 in age group of 26 to 30years,9 in age group of beyond 30 years.

- Among overweight women, **22 in age group of 20 to 25 years**,14 in age group of 26 to 30 years,5 belong to age beyond 30 years.

- Among obese women,4 belong to teenage pregnancy,**82 in age group between 20 to25 years**,57 in age group between 26 to 30 years, and 16 beyond 30 years.

- **In all three categories, majority of population in age group of 20 to 25 years.**

Table 2 : Parity -Primi/Multi

Parity	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Primi	97	48.5%	18	43.9%	83	52.2%
Multi	103	51.5%	23	56.1%	76	47.8%
Total	**200**		**41**		**159**	

Table –2 Illustrates

- Among normal BMI group 97 were primigravida, 103 were multigravida.
- Among overweight women 18 were primigravida and 23 were multigravida.
- Among obese women 83 were primigravida and 76 were multigravida.

Table 3 : Mode Of Delivery

Route	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
LSCS	70	35.0%	11	27.5%	82	52.6%
Labour Natural	129	64.5%	25	62.5%	68	43.6%
Instrumental	1	0.5%	4	10%	6	3.8%
Total	**200**		**40**		**156**	

Table 3 Illustrates

- Among women of normal BMI,70 women delivered by LSCS and **129 women delivered by labour natural** and one by instrumental delivery.
- Among 41 women of overweight,one had abortion.Of remaining 40 women, 11 delivered by LSCS and 25 delivered by labour natural and 4 delivered by instrumental delivery.
- Among obese women,3 had abortion.Of remaining 156 women,**82 delivered by LSCS**,68 delivered by labour natural,6 by instrumental delivery.

Table 4 : Maternal Outcome

Complications	**Normal**		**Over weight**		**Obesity**	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Gestational Diabetes(GDM)	2	1%	3	7.3%	11	6.9%
Pre Eclampsia(PE)	25	12.5%	18	43.9%	88	55.4%
GDM+PE	--		--		1	0.6%
Abruption	3	1.5%	2	4.9%	5	3.14%
Post Partum Haemorrhage	1	0.5%	--		8	5.0%
Wound Infection.	1	0.5%	--		3	1.8%
Lower Respiratory Infection.	--		--		1	0.6%
Deep Venous Thrombosis	--		--		--	
Maternal Mortality	--		--		--	

Table– 4: Illustrates

- 11 Women among obese,3 among overweight and 2 among normal BMI developed gestational diabetes.
- 88 Women among obese,18 among overweight and 25 among normal BMI developed preeclampsia.
- One woman among obese developed both gestational diabetes and preeclampsia.
- 5 women among obese,2 among overweight and 3 among normal BMI developed abruption.
- 8 women among obese and one among normal weight developed postpartum haemorrhage.
- 3 woman among obese developed wound infection and one among normal BMI developed wound infection.
- one woman among obese developed postoperative respiratory infection.

Table 5: Odds Ratio Between Obesity And Normal Weight

Complications	Normal		Obesity		P value	Odds ratio
	No.	%age	No.	%age		
GDM	2	1%	11	6.9%	P<0.05	6.91
PE	25	12.5%	88	55.4%	P<0.0001	4.42
GDM+PE	--		1	0.6%	P=0.417	3.77
Abruption	3	1.5%	5	3.14%	P=0.3158	2.09
PPH	1	0.5%	8	5.0%	P<0.05	10.06
Wound Infection.	1	0.5%	3	1.8%	P=0.2521	3.77
LRI	--		1	0.6%	P=0.4173	3.77
DVT	--		--	--	--	--
Maternal.Mortality	--		--	--	--	--

Table–5 Illustrates

Odds ratio for various outcomes obtained and p value is statistically significant for adverse effects like gestational diabetes, pre eclampsia and postpartum haemorrhage.

Table–6 : Maturity

Term	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Term	197	98.5%	39	97.5%	154	98.7%
Preterm	3	1.5%	1	2.5%	2	1.3%
Total	**200**		**40**		**156**	

Table– 6 Illustrates

- Among 159 obese 3 had abortion.Of remaining 156 obese women, 154 term babies,2 preterm babies reported.

- Among 41 overweight, one had abortion. Of remaining 40 women, 39 are term,1 pre term reported.

- Among normal BMI group, 197 term,3 preterm babies reported.

Table 7 : Birth Weight.

Weight	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
<2.5Kg	64	32.0%	8	20.0%	22	14.1%
2.5Kg to 3Kg	88	44.0%	21	52.5%	99	63.5%
3.1Kg to 3.5Kg	44	22.0%	8	20.0%	27	17.3%
3.6Kg to 4Kg	4	2.0%	3	7.5%	5	3.2%
>4 Kg	--		--		3	1.9%
Total	**200**		**40**		**156**	

Table 7 Illustrates:

1. Among normal BMI group,32%had low birth weight babies with birth weight less than 2.5 kg. Rest had babies with birth weight between 2.5 to 4 kg. No babies with macrosomia reported.
2. Among babies of 40 overweight women,20% babies belong to low birthweight. Rest of babies in birthweight between 2.5 kg to 4 kg.No macrosomia reported.
3. Among babies of 156 obese women,14.1% babies belong to low birthweight,1.9% are macrosomic .Rest had birth weight between 2.5 to 4 kg.

Table 8 : NICU Admission

Admission	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
NICU	34	17%	5	12.5%	28	17.9%
Congenital anomalies	--		--		1	0.6%

Table–8 Illustrates

- 34 babies born to normal BMI mothers got admitted in NICU and majority of admissions are due to low birth weight and their final outcome is good. Remaining babies are well babies.
- 5 babies of overweight and 28 babies of obese women are admitted in NICU and this is due to birth asphyxia,babies of diabetic mothers and IUGR babies of pre eclampsia. Among babies of gestational diabetes only one baby found to have patent ductus arteriosus.
- Only three babies of obese mothers are macrosomic.

Table 9 : Fetal outcome

Alive/Dead	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Dead Born	1	0.5%	1	2.4%	1	0.6%
Alive	199	99.5%	39	95.1%	155	97.5%
Abortion	--		1	2.4%	3	1.9%
Total	**200**		**41**		**159**	

Table 9 Illustrates

- One Intra uterine death reported in each of normal BMI, overweight and obese women. Among women of obese and overweight category intra uterine death reported in diabetic mother.Among normal BMI women,intra uterine death is associated with isolated oligoamnios at term.
- 3 miscarriages reported in obese women and one in overweight group.

Table 10: Family History

Family	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Father	--	0.0%	--	0.0%	3	1.9%
Mother	1	0.5%	15	36.6%	86	54.0%
Both	--	0.0%	--	0.0%	2	1.3%
None	199	99.5%	26	63.4%	68	42.8%

Table 10 Illustrates

- 86 obese and 15 overweight women have positive maternal family history.
- 3 obese women have positive paternal family history.
- 2 obese women have positive family history in both mother and father.
- Among women with normal BMI, only one had positive maternal family history.
- 68 of obese and 26 of overweight and 199 of normal BMI have no family history.

Table 11: Infertility Treatment

Infertility Treatment	Normal		Over weight		Obesity	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Taken	--	0.0%	--	0.0%	7	4.4%
Not Taken	200	0.0%	41	0.0%	152	95.6%

Ttable–11 Illustrates

7 Obese women conceived after infertility treatment. All these seven women suffered from poly cystic ovaries and cycles regularized and they conceived. Their pregnancy outcomes were good.

DISCUSSION

- In our study majority of women in overweight and obese category belong to age group of 20 to 25 years. KRAL JA et al (obes res 1539;12:1539-46) found these young women will perpetuate obesity
    - Directly through influence of maternal weight on fetal origin.
    - Indirectly through maternal to child environmental and social intervention.
- In our study obese primigravida is 52.2% and overweight primigravida is 43.9%. Interconceptional weight reduction strategies should be focused towards these group. Also these interventions are needed for multiparous women not sterilized. Interconceptional weight reduction results in decrease in adverse maternal and fetal outcome in successive pregnancy.
- PETERSON et al[40] 2002 found that multi component intervention for weight loss in interpregnancy period through periodic home visits, telephone counseling and also by group classes can be helpful.
- Regarding mode of delivery, 82 obese women delivered by cesarean and 11 overweight delivered by cesarean section. Obesity is associated with increased rate of cesarean section and also prone for

complications associated with it like anaesthesia complications like difficult spinal and difficult intubation, postpartum haemorrhage,post operative wound infection, respiratory infection.

- Regarding maternal complication,
    - Among obese women, odds ratio for gestational diabetes is 6.91. Obese pregnant women are prone for insulin resistance which predispose to gestational diabetes. Early screening for gestational diabetes at first booking visit is recommended. Testing to be repeated at 24 to 26 weeks if initial screening is negative.
    - Odds ratio for pre eclampsia is 4.42.Obesity is associated with inflammatory changes associated with endothelial damage which predispose to pre eclampsia. Also complications associated with pre eclampsia increase with degree of obesity.
    - In our Hospital, we routinely practice antibiotic prophylaxis before cesarean section and so incidence of wound infection is less.
    - Also thromboprophylaxis is routinely practiced in our Hospital for women with prepregnant body mass index more than or equal to 25 regardless of mode of delivery and also early

ambulation is advised to our patients and so there are nil cases of deep venous thrombosis.

- Regarding perinatal outcomes
  - Among 156 obese women,84% gave birth to babies with birthweight between 2.5kg to 4 kg,1.9%gave birth to babies with birthweight more than 4 kg,14.1%gave birth to babies with birthweight less than 2.5kg.Low birth weight is due to IUGR associated with pre eclampsia.
  - NICU admission in obese individuals is 17.9% and reasons for admission being babies of gestational diabetes,congenitalanomalies,birth asphyxia.
  - Among women with Normal BMI,17% babies admitted since in our hospital it is policy to observe low birthweight babies in NICU and ultimate fetal outcome is good.
  - Regarding family history, among obese,54%had positive maternal,1.9%have positive paternal,1.3%have positive family history in both mother and father.36.6% of overweight women have positive maternal history. Ability of Genetic potential to express fully depends on environmental factors.
  - Among obese women,7 had taken infertility treatment and conceived and their outcomes are good.

- RICH EDWARDS JW[26] et al 1994 found 25% ovulatory infertility observed in overweight and obese women.

Table comparing various studies with our present study.

Studies	**NJ SEBIRE et al 2001 (Odds ratio)**	**VELANKI et al 2011 (Odds ratio)**	**MANDAL et al 2010 (Odds ratio)**	**Present Study(Odds ratio)**
Gestational Diabetes	3.6	4.8	19.43	6.91
Pre Eclampsia	2.1	2	8.76	4.42
Cesarean delivery	1.8	3.45	36.72	1.50
Post Partum Haemorrhage	1.39	1.21	1.39	10.06
Wound infection	2.24	1.7	9.95	3.77
Intra uterine death	1.4	Not included in study	6.62	1.26
Birth weight more than 90 th percentile	2.36	13.8	3.58	8.97

NJ SEBIRE et al[4] in 2001 in studies on maternal obesity and pregnancy outcome conducted in Northwest Thames Hospital, London found adverse maternal and fetal outcome associated with pregnancy and risk increase with degree of obesity. Pathophysiologic link between obesity and adverse outcome needs to be studied before effective management strategies can be devised.

CEDERGREN et al[14] 2004 found odds ratio for stillbirth in BMI > 35kg/m2 to be 2.79(present study OR- 1.25)

WEISS JL et al[21] 2004 found rate of cesarean section to be 34% in obese and 30% in overweight.

USHAKIRAN et al[5] IN BJOG JOURNAL 2005 in studies on outcome of pregnancy in a woman with high BMI found that adverse maternal and fetal outcome proceed with labour and delivery. Odds ratio for cesarean found to be 1.6(present study OR -1.50) ,macrosomia to be 2.1(present study OR- 8.97),Postpartum haemorrhage to be 1.5(present study OR-10.06).

DIETZ et al[15] 2005 found rate of caseraen section to be 14.3% for lean individuals(BMI<20)and 42.6% for obese (BMI>35).Also relative risk of cesarean without any other complications is 1.4 for overweight and 1.5 for obese.

ANNAMARIA et al[1] 2006 in study on implication of maternal overweight and obesity on course of pregnancy and birth outcomes found obesity is associated with adverse reproductive outcomes like infertilty, GDM, preeclampsia, birthdefects, macrosomia, increased cesarean rate, prolonged labour.

CATALENO et al [3]2006 in studies on short and long term implications of maternal obesity on mother and offspring found increased risk of cesarean section with increase in postoperative complications like wound infection, excessive blood loss and postpartum endometritis. In fetus increased risk of neural tube defects and macrosomia.

Yu C et al[7] in BJOG2006 in paper on obesity and pregnancy found three fold increased risk of miscarriage (present study ,odds ratio for obese is 8.80) and instrumental deliveries(in present study ,odds ratio among overweight is 21.51 and odds ratio for obese is 7.8) and increased risk of preeclampsia, thromboembolism and increased perinatal mortality.

CATALANO et al [3]2007 and BAETEN et al 2001 found two fold increased risk of pre eclampsia in overweight and three fold increased risk in obese.

SUSAN Y et al[43] 2008 in studies on association between obesity during pregnancy and increased use of health care found a strong association between higher BMI with old age, high parity, low socioeconomic status. Increased maternal BMI associated with greater use of healthcare services.

DEBASMITA MANDAL et al [30]in 2010 in studies on maternal obesity and pregnancy outcome found an increased incidence of Gestational Diabetes Mellitus, preeclampsia, cesarean rate, postoperative infectious morbidities. Among newborns born to obese mothers increased incidence of macrosomia, birthtrauma, congenital malformations.

VELANKI VENKATA SUJATHA et al[29] in 2011 in studies on high body mass index in pregnancy and its effects on maternal and fetal outcome found a strong association between maternal obesity and threatening complications .

In our study almost all women belong to low socioeconomic status and also majority have not completed school education. **MOKDAD AH et al[41] 1999** among women with less than high school education, prevalence of obesity is roughly twice that of college graduates. **LAITINEN et al[42] 2001** found low income households appear to have high risk of obesity due to increased risk of food insecurity.

SUMMARY

1. Costs and resources to treat obesity is significantly high but success rate is limited, so best way is to prevent obesity.
2. Obesity is multifactorial and it is due to complex interaction between environmental and genetic factors.
3. Exact pathophysiological changes associated with obesity is not clear and more funded research projects going on to find various social,cultural,behavioural and biological factors involved in obesity.
4. ACOG recommends obstetricians and gynecologists should be involved in advising women of reproductive age group regarding healthy lifestyles and measures to prevent obesity.
5. Best practice methods to prevent obesity ,treatment and maintenance of optimum weight must be formulated in order to overcome the epidemic of obesity.
6. Only limited interventional studies focused on optimal weight gain during pregnancy and weight loss during pregnancy.ACOG recommends IOM guidelines for gestational weight gain and weight loss not advisable during pregnancy.
7. Surgical interventions like gastric bypass and lap-band surgeries are useful among obese women of reproductive age group. Recent studies

showed it does not interfere with perinatal outcomes and also decrease the rate of gestational diabetes, macrosomia and cesarean section.

8. Women after successive pregnancies tends to retain weight gained during pregnancy. This adversely affect the reproductive outcomes in her subsequent pregnancies. So weight loss interventions to be targeted in interconceptional period.
9. Obesity management training for obstetrician and gynaecologist may be helpful to curb obesity epidemic among women of reproductive age group.

CONCLUSION

1. Obesity is associated with adverse maternal and fetal outcomes.
2. Maternal body mass index of 30 and above is associated with increased risk of developing pre eclampsia, gestational diabetes, dysfunctional labour, increased rate of cesarean section, labour complications like post partum haemorrhage, fetal macrosomia and IUGR babies due to pre eclampsia.
3. High utilization of hospital resources starting from ultrasound examination in antenatal period, intra partum monitoring of labour, special equipments for their transportation, operating tables and surgical instruments.
4. Prevention of obesity among adolescent age girls through healthy lifestyle is the only solution to put an end to these continuum of adverse outcomes in pregnancy.
5. Interpregnancy weight reduction to be advised to reduce adverse pregnancy outcomes in their subsequent pregnancy.
6. Weight gain during pregnancy to be followed as per IOM guidelines.

Figure 1 : Patients age Distribution.

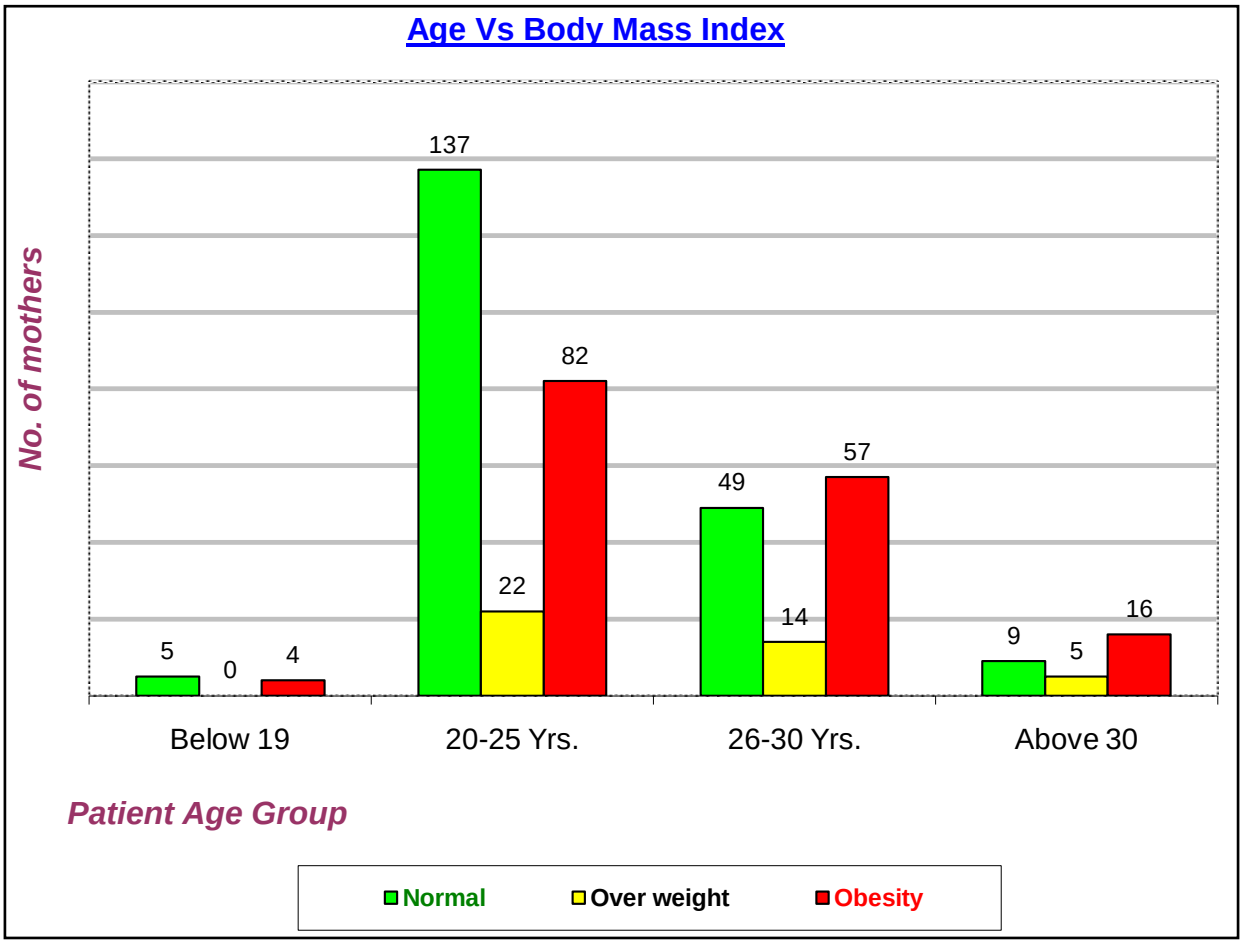


Figure 2 : Parity -Primi/Multi.

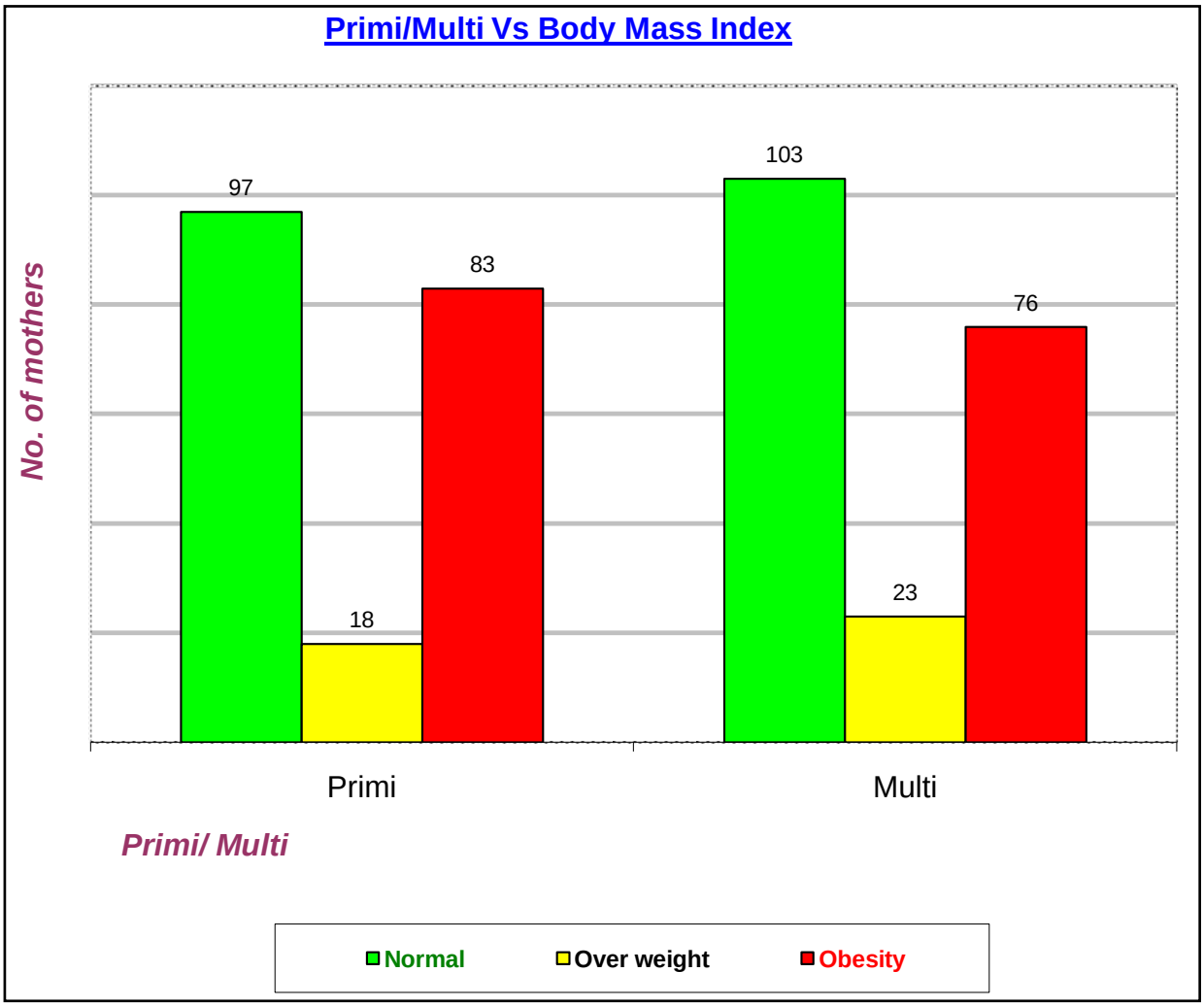


Figure 3 : Mode Of Delivery

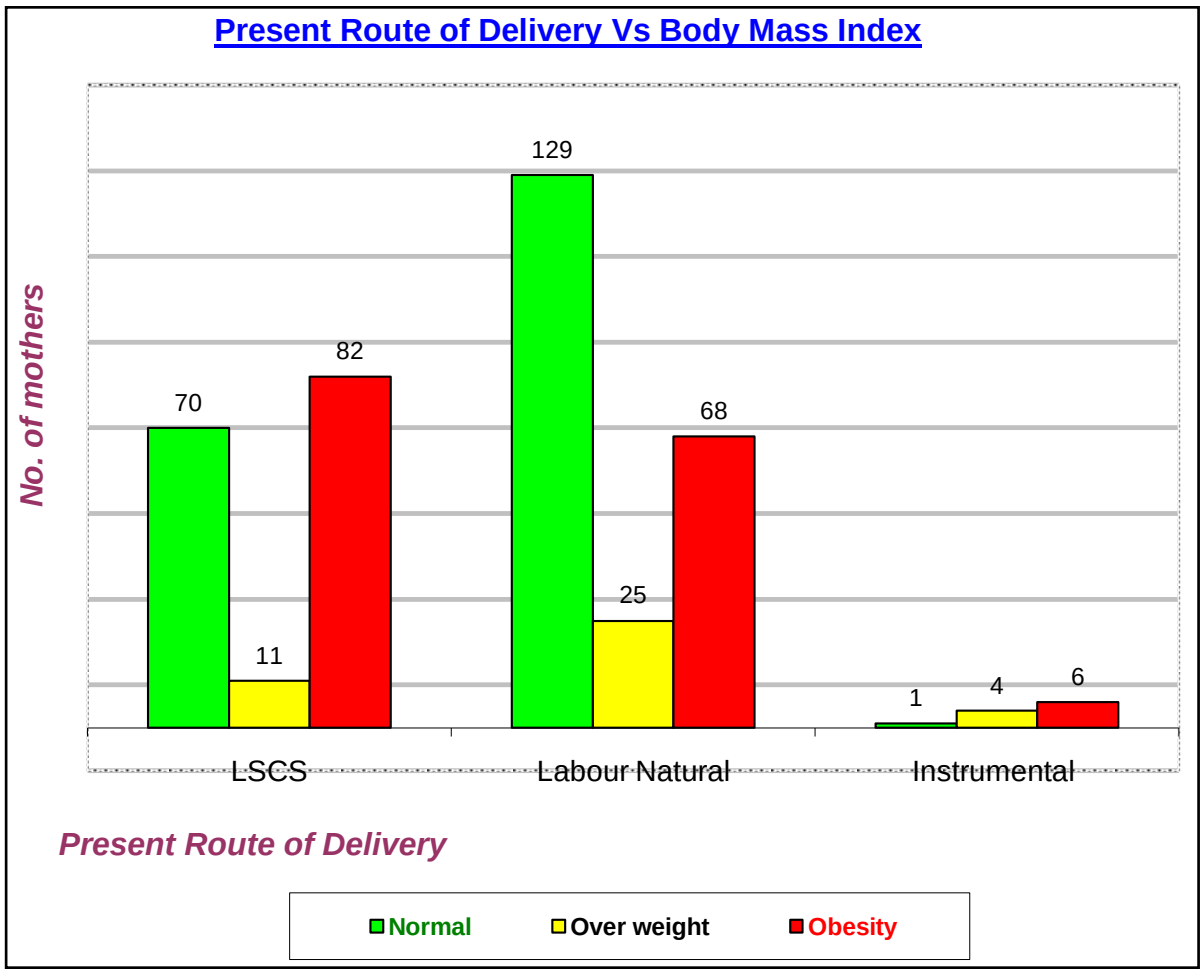
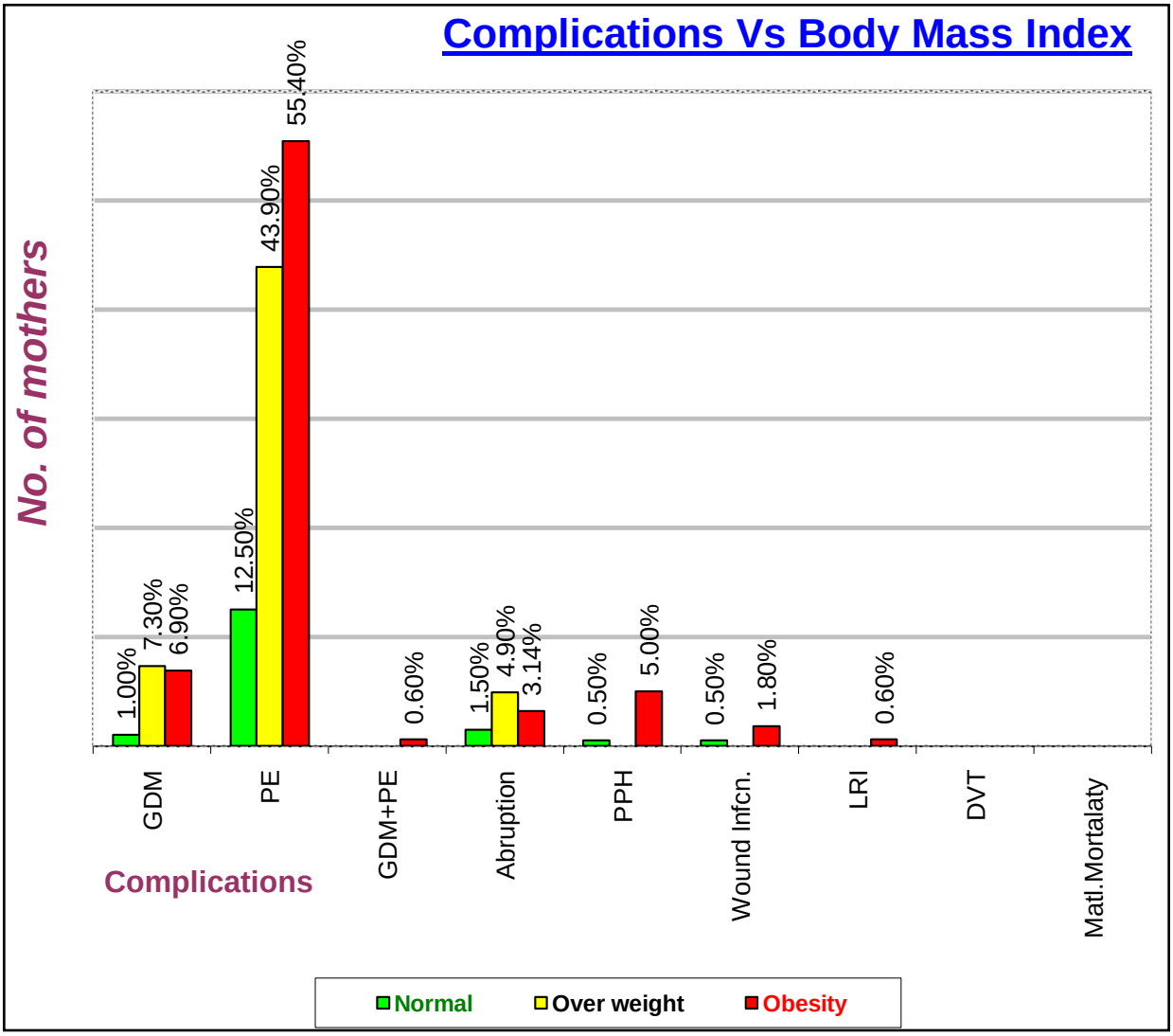


Figure 4 : Maternal Outcome



Figure–5 : Maturity

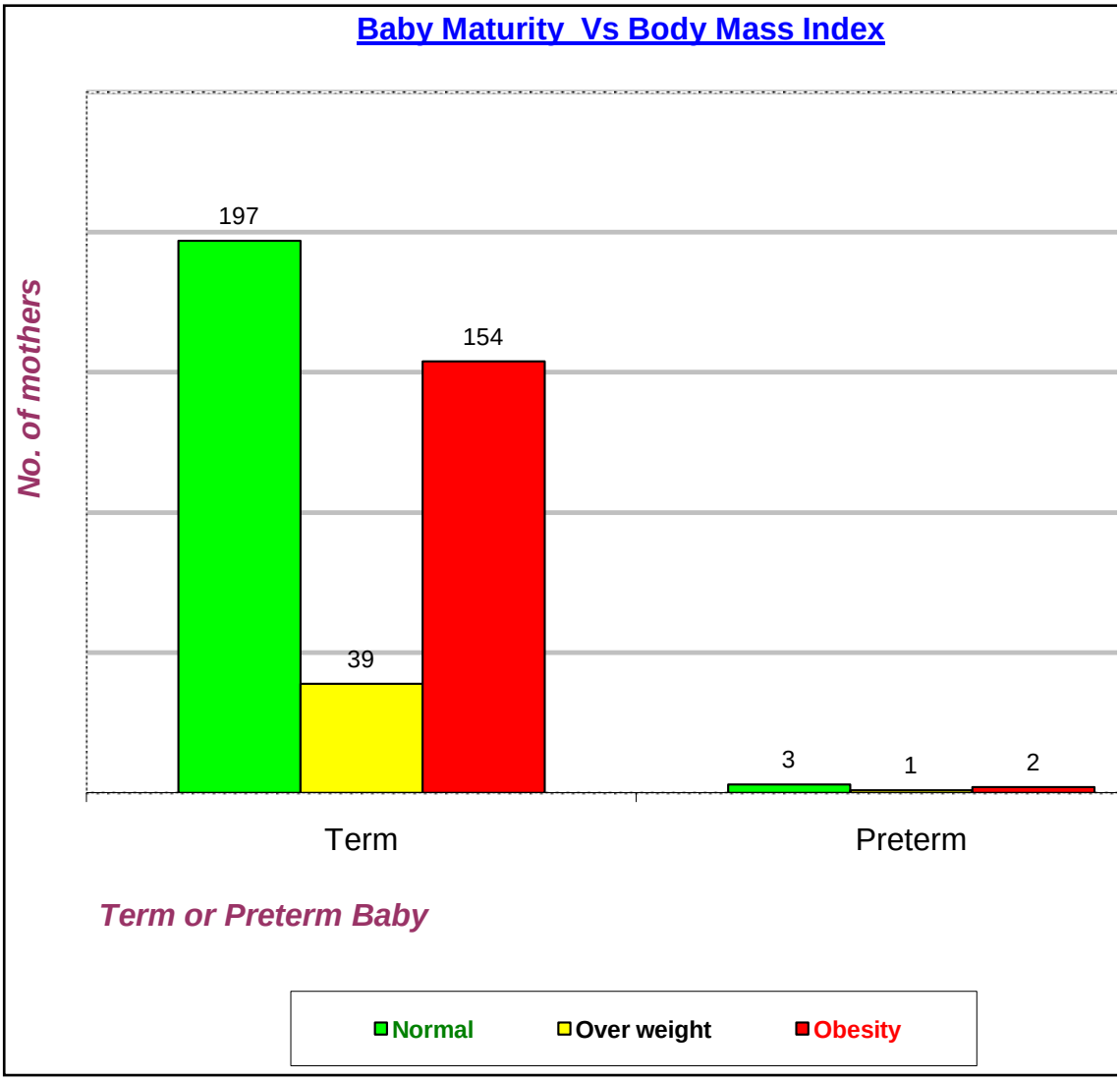


Figure 7 : Birth Weight

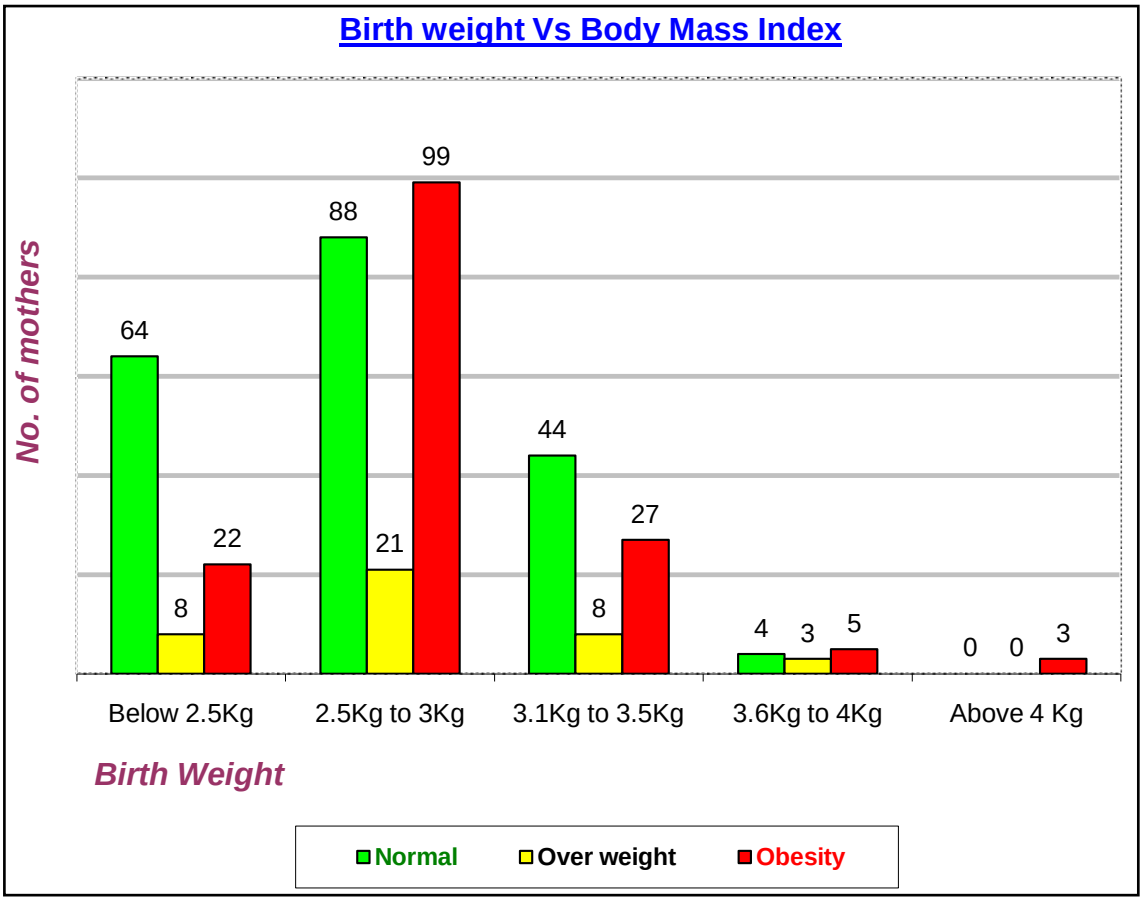


Figure 8 : NICU Admission

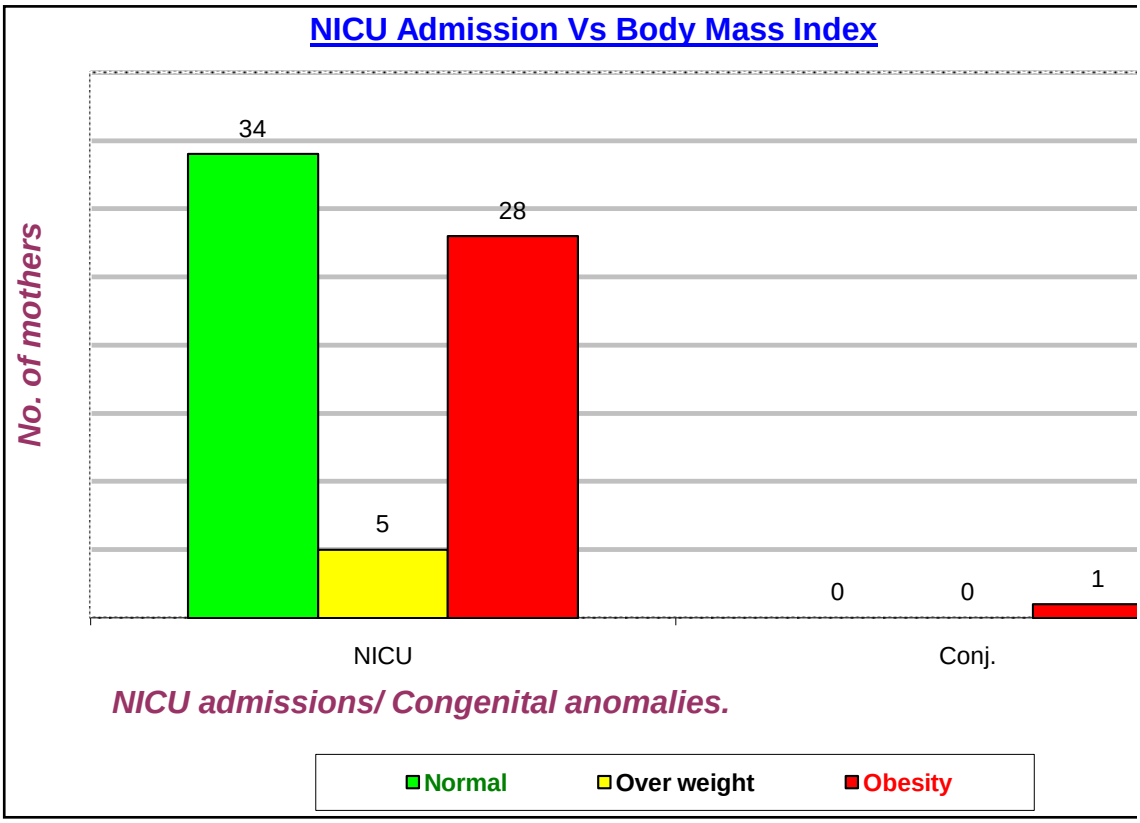


Figure 9 : Fetal outcome

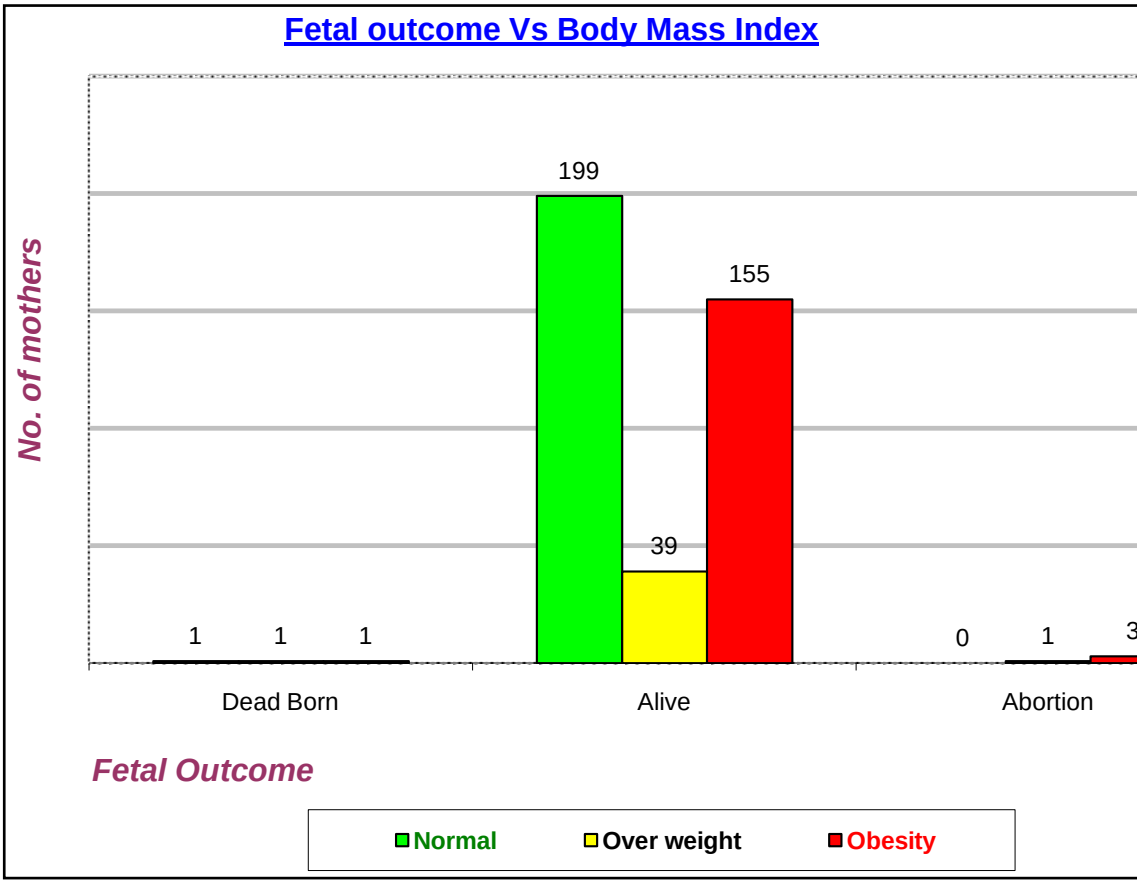


Figure 10: Family History

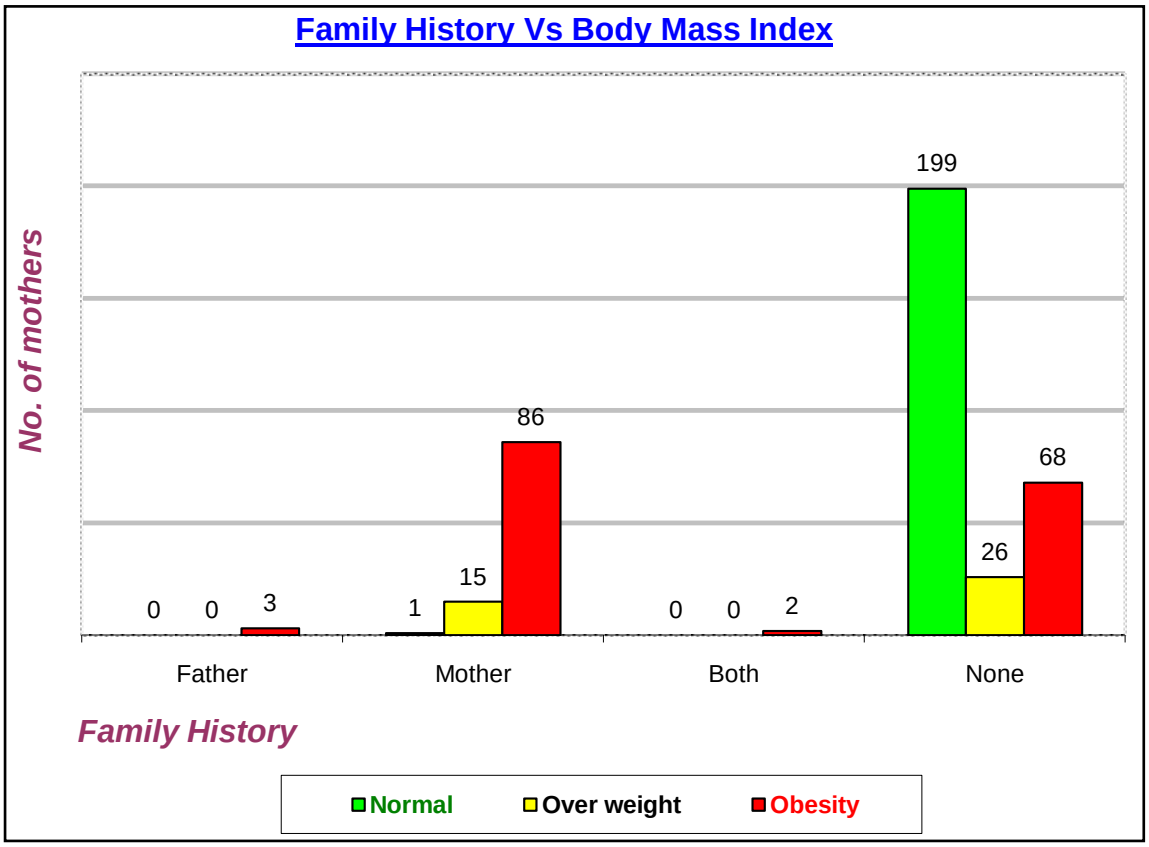
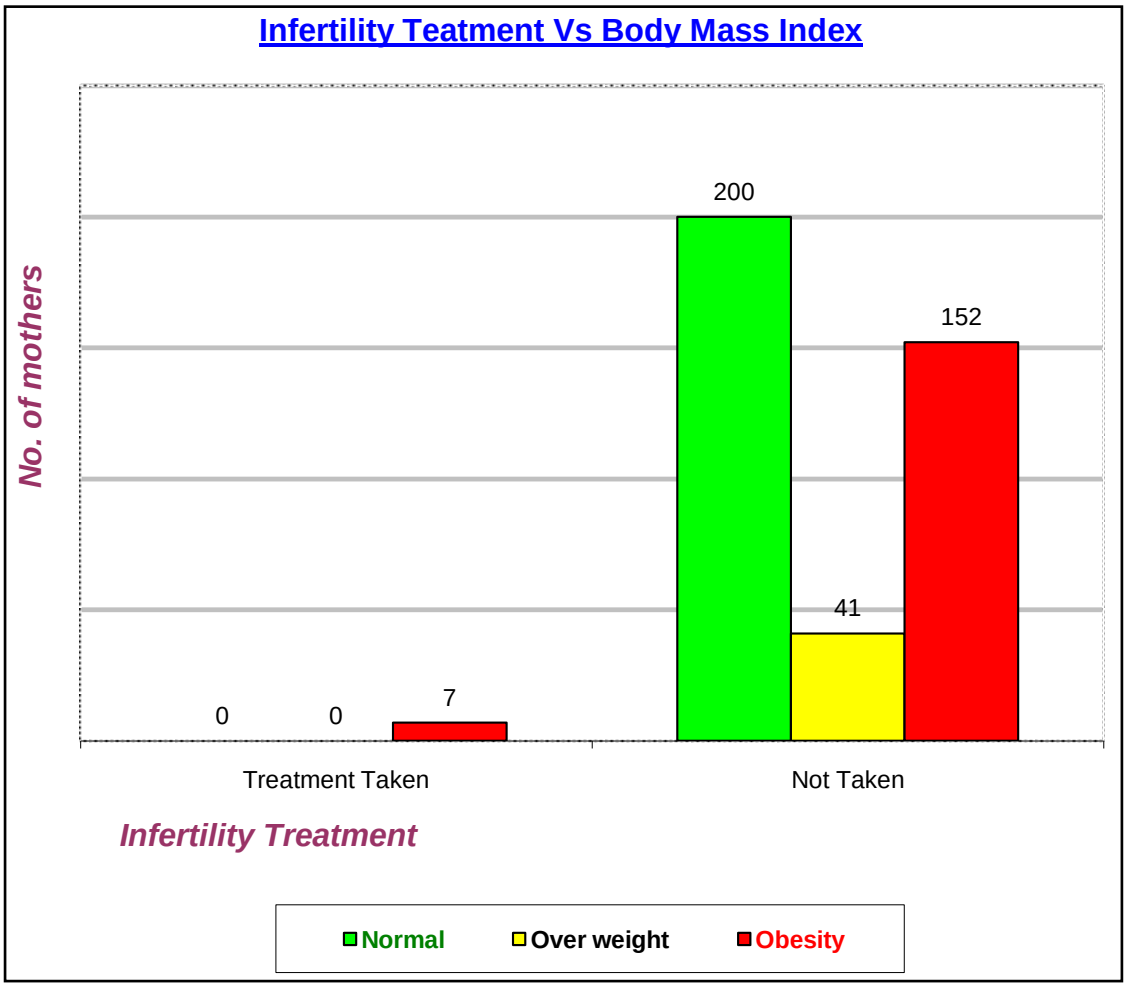


Figure 11: Infertility Treatment



OBESE MOTHER WITH IUGR BABY

POST OPERATIVE OBESE MOTHER WITH PRE ECLAMPSIA

IUGR BABY

ANTE NATAL OBESE MOTHER WITH PRE ECLAMPSIA

ANTE NATAL OBESE MOTHER WITH GESTATIONAL DIABETES

ANTE NATAL OBESE MOTHER WITH GESTATIONAL DIABETES AND PRE ECLAMPSIA

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IMPACT OF MATERNAL PRE PREGNANT OBESITY ON MOTHER AND FETUS.

Name of patient : **Age :**

Hospital no : **Patient No. :**

Name of husband :

Permanent address :

Temporary address :

Contact no :

Date 0f visit to GRH :

Socioeconomic status : Class I / II / III / IV / V

Educational status : Employment status :

Obstetric code : Primi / Multi

If primi-conceived spontaneously/after infertility treatment:

If multi -details of previous delivery:

Previous history of miscarriages: yes/no

- **If yes-spontaneous/induced**

Menstrual cycles : Regular/Irregular

Lmp : Edd :

Marital history :

- **Married since**
- **Consanguinuity : Non Consanguineous/I degree/2nd/3rd/4th**

Diet history : Vegetarian/Non–Vegeterian-

Lifestyle : Sedentary/Ambulatory

Exercise history : Regular Walking/ Labourer /Other forms

Known case of Diabetes Type 2 : Yes / No.

Known case of Hypertension : Yes / No

Any other significant past history : Yes / No

Family history of diabetes : Mother/Father/Both/none

Family history of hypertension : Mother/Father/Both/none

Family history of obesity: Mother/Father/Both/None

Examination:

	Booking visit	**2nd trimester (24-28 wks)**	**3rd trimester**	**Delivery**
Height(meters)				
Weight(kg)				
Body Mass Index(kg/m2)				
Blood Pressure				
CVS				

RS				
Anemia				
Goitre				
Varicose vein				
Pedal edema				
Per abdomen				
Per vagina				
Investigations	**Booking visit**	**2nd trimester(24-28 weeks)**	**3rd tri mester**	**Delivery**
Blood grouping and typing				
PPTCT				
HB				
Urine **Albumin** **Sugar**				
Blood Urea Serum creatinine				

Liver function test				
GCT and OGTT (24-28 weeks) 75 gm oral glucose				

Mode of delivery :

Term/preterm :

Spontaneous/induced :

Labournaturals /Outlet Forceps/ Vacuum/ Cesarean

Complications during labour :

Maternal injury : Yes/ No

Shoulder Dystocia : Yes/No

PPH : Yes/No

Medically managed / Surgically managed :

Postnatal period :

Difficulty in Lactation : Yes/No

If cesarean-elective/emergency

Indication for caesarean :

Type of incision : Pfannensteil/RPM/others

Closed with drain/not :

Postoperative period :

Wound infection : Yes/No

If yes , Pus culture :

Thromboprophylaxis : Yes / No

Respiratory infection : Yes / No

Other complications if any :

Baby details :

Term/preterm :

Alive/deadborn/stillbirth

Sex : Male / Female

Birth weight :

Apgar 1min : 5min :

Admission in NICU : Yes/No

If yes, reason and outcome :

Congenital anomalies : Yes/No

Type of anomaly :

Postnatal follow–up :

Ref. No. 3104/E4/3/2012

Govt.Rajaji Hospital,Madurai.20.
Dated: .03.2012

Institutional Review Board / Independent Ethics Committee.
Dr. A. Edwin Joe, M.D (FM), BL.,
Dean, Madurai Medical College & 2521021 (Secy)
Govt Rajaji Hospital, Madurai 625020.
Convenor
grhethicssecy @gmail.com.

Sub: Establishment-Govt. Rajaji Hospital, aMadurai-20-
Ethics committee-Meeting Agenda-communicated-regarding.

The Ethics Committee meeting of the Govt. Rajaji Hospital, Madurai was held at 11.00 Am to 1.00Pm on 29.03.2012 at the Dean Chamber, Govt. Rajaji Hospital, Madurai. The following members of the committee have been attended the meeting.

1. Dr.N.Vijayasankaran,M.ch(Uro.) 094-430-58793 0452-2584397	Sr.Consultant Urologist Madurai Kidney Centre, Sivagangai Road,Madurai	Chairman
2. Dr.P.K. Muthu Kumarasamy, M.D., 9843050911	Professor & H.O.D of Medical, Oncology(Retired)	Member Secretary
3. Dr.T.Meena,MD 094-437-74875	Professor of Physiology, Madurai Medical College	Member
4. Dr. S. Thamilarasi, M.D (Pharmacol)	Professor of pharmacology	
5. Dr.Moses K.Daniel MD(Gen.Medicine) 098-421-56066	Professor of Medicine Madurai Medical College	Member
6. Dr.M.Gobinath,MS(Gen.Surgery)	Professor of Surgery Madurai Medical College	Member
7. Dr.S. Dilshadh, MD(O&G) 9894053516	Professor of OP&Gyn Madurai Medical College	Member
8. Dr.S.Vadivel Murugan., M.D, 097-871-50040	Professor of Medicine Madurai Medical College	Member
9. Shri.M.Sridher,B.sc.B.L. 099-949-07400	Advocate, 2, Deputy collectors colony 4th street KK Nagar, Madurai-20.	Member
10. Shri.O.B.D.Bharat,B.sc., 094-437-14162	Businessman Plot No.588, K.K.Nagar,Madurai.20.	Member
11.Shri. S.sivakumar,M.A(Social) Mphil 093-444-84990	Sociologist, Plot No.51 F.F, K.K Nagar, Madurai.	Member

Following Projects were approved by the committee

(Dept of Ob gyn)

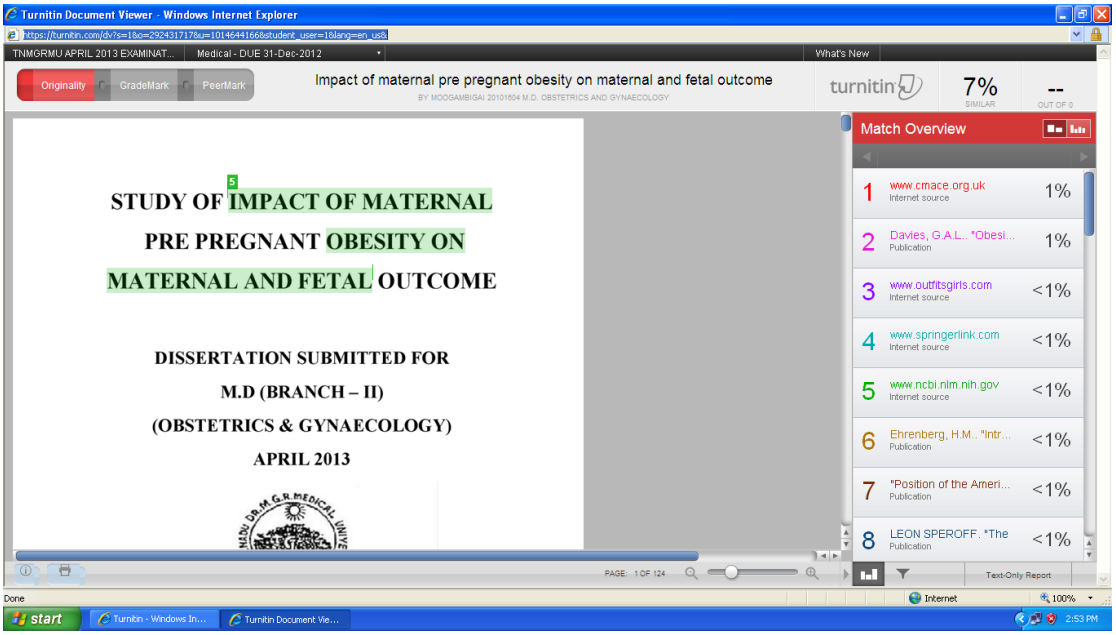
Sl. No	Name of P.G.	Course	Name of the Project	Remarks
1.	Moogambigai	PG, M.D (ob gyn)	Maternal pre-pregnant weight and fetal-maternal outcome	Approved

Please note that the investigator should adhere the following: She/He should get a detailed informed consent from the patients/participants and maintain Confidentially.

1. She/He should carry out the work without detrimental to regular activities as well as without extra expenditure to the institution to Government.
2. She/He should inform the institution Ethical Committee in case of any change of study procedure site and investigation or guide.
3. She/He should not deviate for the area of the work for which applied for Ethical clearance. She/He should inform the IEC immediately, in case of any adverse events pr Serious adverse reactions.
4. She/he should abide to the rules and regulations of the institution.
5. She/He should complete the work within the specific period and apply for if any Extension of time is required She should apply for permission again and do the work.
6. She/He should submit the summary of the work to the Ethical Committee on Completion of the work.
7. She/He should not claim any funds from the institution while doing the word or on completion.
8. She/He should understand that the members of IEC have the right to monitor the work with prior intimation.

DEAN

To
All the above members and Head of the Departments concerned.
All the Applicants.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MASTER CHART

Sl. No	NAME	AGE	IP. NO.	BMI(Kg/meter squares)	SOCIO ECONOMIC STATUS	EDUCATION (graduate or not)/EMPLOYMENT STATUS	OBSTETRIC CODE	PREVIOUS ABORTION HISTOR	MENSTRUAL HISTORY	INFERTILITY TREATMENT	DIETARY HISTORY(VEG/NON	FAMILY HISTORY OF OBESIT	MODE OF DELIVERY	COMPLICATIONS			BABY DETAILS					
														ANTE PARTUM	INTRA PARTUM	POST PARTUM	MATURITY	ALIVE/DEAD	BIRTH WEIGHT. (kg)	NICU ADMISSION	ANOMALY	FINAL OUTCOME
1	SATHYA	26	5143	32	low	no	primi	no	irregular	yes	mixed	father	outlet forceps	PE	NO	PPH	TERM	ALIVE	3	NO	NO	GOOD
2	DEVI	28	21134	31.11	LOW	NO	MULTI	NO	REGULAR	NO	MIXED	NONE	LSCS	PE	RUPTION	NO	TERM	ALIVE	3.2	YES	NO	GOOD
3	DURGADEVI	30	21170	31.11	LOW	NO	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
4	KALAIVANI	30	19704	30.9	low	no	MULTI	no	irregular	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	WOUND INFECTIO		ALIVE	3.7	NO	NO	GOOD
5	FATHIMA	21	21491	35.74	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	LRI	TERM	ALIVE	3.5	NO	NO	GOOD
6	PALANIAMMAL	25	19796	31.63	low	no	primi	no	irregular	yes	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.5	YES	PDA	GOOD
7	MEENA	23	21336	37.75	low	no	MULTI	no	REGULAR	NO	mixed	FATHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.75	YES	NO	GOOD
8	vetriselvi	23	21146	33.16	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	pph	TERM	ALIVE	2.75	NO	NO	GOOD
9	SAMSIRABANU	25	21470	31.55	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.75	YES	NO	GOOD
10	SRIDEVI	24	21373	34.18	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
11	JERINABEGUM	30	21340	43.34	low	no	primi	no	irregular	yes	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.1	YES	NO	GOOD
12	SUDHA	26	21368	36.73	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
13	MURUGESHWARI	28	21107	31.11	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	3.2	N0	NO	GOOD
14	RAJALAKSHMI	28	21301	34.3	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
15	ARUNUMAMAHESHW	27	21558	39.79	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	NIL	NO	NO	NO	NIL	NIL	NIL	NO	NO	ABORTED
16	ABIRAMI	20	21562	33.77	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	PPH	TERM	ALIVE	3.2	NO	NO	GOOD
17	PARAMESHWARI	27	21252	33.33	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
18	VANITHA	28	21294	33.13	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
19	SATHYA	21	21276	36.73	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
20	PUSHPA	28	21503	30.66	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
21	INDHRA	28	21569	38.77	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
22	LAKSHMI	33	21595	37.24	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	PPH	TERM	ALIVE	2.8	NO	NO	GOOD
23	BHAVANI	22	20911	31.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
24	SHANTHI	28	20448	32	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	1.6	YES	NO	GOOD
25	GANGADEVI	28	20974	46.9	low	no	primi	no	irregular	yes	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
26	MAHESHWARI	25	21145	31.11	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD

27	KASIAMMAL	36	19817	32.2	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
28	ARUNAMARY	26	20797	38.26	low	no	MULTI	no	REGULAR	NO	mixed	BOTH	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
29	BISMIBANAZIR	20	20724	33.33	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	GDM	NO	NO	TERM	ALIVE	4	YES	NO	GOOD
30	SUMATHI	26	20485	31.11	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
31	SHOBANA	22	20643	35.71	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
32	MANIMEGALAI	24	20516	30.66	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	rEPEAT LSCS	NO	NO	NO	TERM	alive	3	NO	NO	GOOD
33	ALAGAMAL	20	20371	35.55	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
34	JEYALAKSHMI	28	20601	33.33	low	no	MULTI	YES	irregular	yes	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
35	SHENBAGAVALLI	30	21311	35.2	low	no	primi	no	REGULAR	NO	mixed	BOTH	LSCS	PE	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
36	NIRMALA	27	19902	33.16	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	GDM	NO	NO	TERM	ALIVE	4.1	YES	NO	GOOD
37	SHANTHI	22	21052	32	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.1	YES	NO	POOR
38	UMA	29	20697	42.66	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	,PE	NO	NO	TERM	ALIVE	2	YES	NO	POOR
39	PALANIAMMAL MUR	25	19796	31.66	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	YES	NO	GOOD
40	KALIAMMAL	32	19317	33.12	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
41	REVATHI	28	20928	29.51	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
42	PUSHPAVALLI	30	20944	34.69	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
43	SATHYA	21	21276	31.25	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
44	VADIVU	30	21758	34.66	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
45	MALAR	30	21506	31.1	low	no	primi	no	irregular	yes	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
46	VANITHA	29	21748	28.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
47	KANIPANDI	32	6152	36.44	low	no	primi	no	irregular	yes	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
48	LATHEEBABEVI	31	18683	35.22	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	4.2	YES	NO	GOOD
49	AISHWARYA	20	17869	32	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
50	KALAIMEENAKSHI	30	17895	48.46	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	,GDM	NO	NO	TERM	ALIVE	4.6	YES	NO	GOOD
51	MUTHULAKSHMI	24	6344	29.77	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
52	ROHINI	26	6157	28.1	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
53	athya	21	10432	30.61	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	ABRUPTIO	NO	PRETERM	LIVE	2	YES	NO	GOOD
54	AMUTHA	26	9274	27.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
55	TAMILVANI	22	9226	27.55	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
56	KALLESWARI	23	9811	31.11	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	ABRUPTIO	NO	PRETERM	ALIVE	1.75	YES	NO	POOR
57	SELVAMEENA	29	18752	31.63	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
58	ILAMATHI	20	20868	30.22	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	2.8	YES	NO	GOOD
59	NALLAMAL	29	22319	29.77	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
60	SABARBANU	31	22352	28.88	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
61	VIMALA	27	22378	28.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
62	KARUTHAMMAL	18	22393	30.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
63	KAVITHA	27	22270	28.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	outlet forceps	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
64	PANJAVARNUM	32	22025	34.31	low	no	MULTI	YES	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
65	SUMATHI	22	21687	33.33	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
66	SRIVISADEVI	28	22369	50	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
67	REVATHIMOORTHI	25	22161	45.91	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
68	RAJATHI	26	22142	28.88	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	1.3	YES	NO	POOR

69	KASTHURI	31	22202	30.22	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3.75	NO	NO	GOOD
70	KAVITHA	26	20522	28.88	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
71	MANIMEGALAI	26	22086	29.59	LOW	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
72	REKHA	25	22038	27.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
73	SURYAKALA	23	22060	33.33	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
74	MANJAMADEVI	29	21846	32.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
75	MUTHUMEENA	27	72921	34.66	low	no	MULTI	YES	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
76	MALARVILLI	31	22168	32	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
77	THIVAGI	22	21817	33.33	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
78	MUTHURAKKU	27	21947	31.11	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
79	SARASWATHI	30	22865	40.81	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
80	MAHESHWARI	24	21889	28.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.25	NO	NO	GOOD
81	NAGAMMAL	32	21887	28.88	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
82	MUTHUSELVI	26	21828	35.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE		NO	NO	NO						ABORTED
83	LAKSHMI	23	21751	33.33	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
84	LATHA	24	21764	31.12	low	no	MULTI	no	REGULAR	NO	mixed	NONE	outlet forceps	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
85	KAVITHA	24	21789	35.71	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
86	JENETHBIRTHOSE	28	22008	32	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	NO	ABRUPTIOI	NO	TERM	ALIVE	2	YES	NO	POOR
87	BAGYAJOTHI	21	21736	37.24	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
88	HAMEETHABANU	27	21882	32	low	no	MULTI	YES	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
89	SUDANDIRAKANI	35	21618	31.11	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LSCS	GDM	NO	NO	TERM	ALIVE	2.8	YES	NO	GOOD
90	REKHA	25	21867	29.77	low	no	MULTI	YES	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
91	LAKSHMIPATCHAIKAI	33	21890	37.24	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
92	RAJESHWARI	25	21554	31.11	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	PE	ABRUPTIOI	NO	TERM	ALIVE	1.75	YES	NO	GOOD
93	DEEPA	30	21743	31.11	low	no	MULTI	no	REGULAR	NO	mixed	FATHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
94	JEYANTHI	23	21883	31.11	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
95	AMUTHAPERUMAL	22	19490	30.61	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
96	MURUGESHWARIMU	27	21767	29.33	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
97	ANJUGAM	32	21501	34.66	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
98	ABINAYA	21	21507	27.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	ABRUPTIOI	NO	PRETERM	DEAD	1.25			POOR
99	GEETHA	23	21974	31.11	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER		NO	NO	NO						ABORTED
100	PETHALAKSHMI	29	21806	45.91	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	PPH	TERM	ALIVE	2.4	NO	NO	GOOD
101	SOORYA	22	22149	30.22	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	REPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
102	SUNDARAMAL	31	22109	28.88	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	outlet forceps	NO	NO	NO	TERM	ALIVE	2.8	N0	NO	GOOD
103	SELVAMEENAVIJAYAN	26	18852	36.22	LOW	NO	MULTI	NO	REGULAR	NO	MIXED	NONE	LN	GDM	NO	NO	TERM	ALIVE	2.5	YES	NO	GOOD
104	NAGASELVI	23	21552	28.88	LOW	NO	primi	no	REGULAR	NO	mixed	MOTHER	outlet forceps	PE	ABRUPTIOI	NO	TERM	ALIVE	3.2	YES	NO	GOOD
105	SUDHA	24	22128	39.06	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
106	PANDEESHWARI	22	22113	31.55	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
107	VIJAYA	32	22181	30.22	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3	NO	NO	POOR
108	BHAGYALAKSSHMI	21	22093	29.08	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	NO	NO	NO	TERM	ALIVE	3.6	NO	NO	GOOD
109	BENAZIR	21	22191	32	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
110	SUDHA	22	21960	33.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD

111	KANIMOLI	29	22209	40.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.9	NO	NO	GOOD
112	MANIMEGALAI	24	20056	32	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
113	RASIKA	32	19411	27.55	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
114	JANANI	20	19051	28.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.6	NO	NO	GOOD
115	NAGAMAL	20	18530	28.57	LoW	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
116	SUNDARAVALLI	25	17804	28.12	low	no	primi	no	REGULAR	NO	mixed	NONE	outlet forceps	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
117	VANITHA	24	17930	28	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
118	SEEBHA	34	7073	34.69	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
119	JERINA	32	21856	27.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
120	KALIMUTHU	23	21583	31.55	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	PE	NO	PPH	TERM	ALIVE	3.1	NO	NO	GOOD
121	GANGA	25	20890	46.93	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	PPH	TERM	ALIVE	2.8	NO	NO	GOOD
122	MUTHAYEE	26	22264	32	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
123	KALAISELVI	23	22276	26.53	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
124	MAHADEVI	27	21819	29.33	low	no	MULTI	no	REGULAR	NO	mixed	NONE	rEPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
125	LAKSHMI	20	20099	30.61	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
126	PANDEESHWARI KUM	22	19069	30.61	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
127	BHAGYAM	25	20689	31.55	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
128	KATHYAYINI	25	21175	30.22	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	rEPEAT LSCS	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
129	CHANDRAKALA	23	19481	28.9	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.6	NO	NO	GOOD
130	DEEPABHASKARAN	25	19521	30.17	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
131	KANIMOLIANANDKUM	30	22090	33.33	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.7	NO	NO	GOOD
132	APRIN	21	21676	30.22	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
133	MUTHUMEENARAVIK	20	22003	31.55	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	Alive	3.2	NO	NO	GOOD
134	THANGAMMAL	26	22210	30.61	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
135	PALANIAMMAL	26	22291	28.88	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
136	JULI	23	22452	29.29	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
137	MALAR	20	22330	31.63	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
138	KALIAMMAL RAMACH	29	21949	28.12	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	GDM	NO	NO	TERM	ALIVE	3.5	YES	NO	GOOD
139	RAMALAKSHMI	20	7152	29.22	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
140	VANITHA VIJIKUMAR	29	21748	32.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
141	SELVAMEENA	25	18752	32.14	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
142	GEETHA RAJENDRAN	22	23502	34.19	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
143	VINODHINI	21	23297	30.61	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
144	VELMURUGESHWARI	21	22976	27.55	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
145	VIJAYALAKSHMI	28	23351	33.16	low	no	MULTI	YES	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
146	MEENAMBIGAI	28	23251	32.25	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
147	RAMADEVI	34	23203	30.22	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
148	DHANALAKSHMI	22	28255	30.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
149	JOTHI	27	23552	37.75	low	no	primi	no	irregular	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
150	NIRAIMATHI	24	23415	36.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
151	GEETHA	28	23416	35.55	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
152	RAMANI	28	23279	37.75	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD

153	DHANALAKSHMI PON	27	23496	31.11	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
154	SHANTHI	29	23195	34.66	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
155	KANAGA	19	23469	31.25	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
156	DEVI	25	23411	35.71	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
157	SETHULAKSHMI	24	23098	32	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
158	AMUTHA	23	21112	31.63	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
159	FARIDABANU	24	23039	33.67	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
160	VIJAYALAKSHMIBALA	20	23627	32.88	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
161	CHELLAPANDIAMAL	23	23473	33.16	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	aLIVE	3.5	no	NO	GOOD
162	vani	22	23481	29.08	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	aLIVE	3	YES	NO	GOOD
163	thaiba	23	23540	28.88	low	no	primi	no	REGULAR	NO	mixed	NONE										ABORTED
164	KALARANJANI	19	23524	31.11	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
165	POTHUMPONNU	23	23657	30.61	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	YES	NO	POOR
166	BENA ZIR SARKARAIM	21	23547	31.63	low	no	primi	no	REGULAR	NO	mixed	MOTHER	outlet forceps	PE	NO	NO	TERM	ALIVE	3.5	YES	NO	GOOD
167	SUVITHA	23	23409	36.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
168	GEETHA SEVUGAPERU	26	23479	36.73	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
169	NITHYA	23	23490	28.57	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	2.2	YES	NO	GOOD
170	SANGEETHA	20	22342	30.61	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	1.75	YES	NO	POOR
171	VIJAYALAKSHMI	20	23627	32.88	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LSCS	PE	NO	NO	TERM	ALIVE	2.9	YES	NO	GOOD
172	ANEESHFATHIMA	26	15830	33.16	LOW	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
173	MUTHUIRULAYE	25	16239	36.73	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
174	VASUKI	24	16588	35.71	low	no	primi	no	REGULAR	NO	mixed	MOTHER	VACUUM	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
175	MEENAKSHI	20	16447	32.44	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
176	MUTHUKAMAKSHI	22	16527	32	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	DEAD	2.4	NO	NO	POOR
177	PANCHAVARNAM	24	20000	38.77	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	3.5	YES	NO	GOOD
178	SUBHA	34	7073	32.88	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
179	RAMALAKSHMI	20	7152	36.73	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	PPH	TERM	ALIVE	3	NO	NO	GOOD
180	MADAPURAMKALI	24	7283	33.77	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE,GDI	NO	NO	TERM	ALIVE	2.4	YES	NO	GOOD
181	MALATHI	26	8340	35.18	low	no	primi	no	REGULAR	NO	mixed	NONE	outlet forceps	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
182	TAMILVANI	22	9226	37.75	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
183	LATHA	25	9229	31.11	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
184	SASIKALA	19	7668	34.24	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
185	POTHIALAGU	21	10402	33.77	low	no	primi	no	REGULAR	NO	mixed	NONE	outlet forceps	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
186	BAKIALAKSHMI	30	11943	38.26	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
187	SATHYA	20	13718	35.71	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
188	JANAKI	23	22848	33.77	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
189	INDHRA	28	21858	36.73	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
190	IL AMATHI CHANDRA	20	20868	32.88	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	GDM	NO	NO	TERM	ALIVE	3	YES	NO	GOOD
191	PANDEESHWARI	27	21176	32.09	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
192	MUTHAMAL	35	18932	34.7	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	GDM	NO	NO	TERM	ALIVE	3	YES	NO	GOOD
193	TEJ	24	19559	35.34	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
194	SAMATHAANAM	22	19497	35.08	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD

195	RAJATHI	30	17252	36.44	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
196	MUTHUMARI	21	15387	35.18	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
197	SUNDARI	21	14736	33.76	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
198	POURNAPRIYA	27	14734	35.78	low	no	primi	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
199	MUTHUSELVI	20	13722	26.82	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
200	NAGAJOTHI	22	13703	27.8	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
201	AMUTHA	24	13101	22.82	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
202	VANITHA	24	17930	21.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
203	KALLACHI	21	17936	22.62	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	1.5	YES	NO	POOR
204	VANITHAGOBINATH	25	19057	24.48	LOW	NO	MULTI	NO	REGULAR	NO	MIXED	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	N0	NO	GOOD
205	RASITHA	32	19411	23.67	LOW	NO	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
206	LAKSHMI	27	19524	24.45	low	no	MULTI	no	REGULAR	NO	mixed	MOTHER	LN	PE	NO	NO	TERM	ALIVE	1.3	YES	NO	POOR
207	PREMA	20	240403	23.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	PRETERM	ALIVE	1.5	YES	NO	GOOD
208	SUBBULAKSHMI	31	24999	22.22	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
209	PANDEESHWARI	20	24920	22.66	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
210	GOMATHY	22	24926	23.29	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
211	PARVATHY	23	24995	23.11	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
212	TAMILARASI	24	24828	23.46	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	no	NO	GOOD
213	RASATHI	23	24586	22.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
214	BHUVANESHWARI	26	24463	22.26	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
215	SUNDHARI	29	24774	23.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	PPH	TERM	ALIVE	3.2	NO	NO	GOOD
216	VIJAYALAKSHMI	25	25002	23.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.3	NO	NO	GOOD
217	NARJABANU	21	24472	21.6	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.25	NO	NO	GOOD
218	KANBIYAMMAL	20	24976	21.42	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
219	CHANDRAKALA	30	25070	19.38	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.1	YES	NO	GOOD
220	MUTHULAKSHMI	20	25066	20.12	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
221	RAMALAKSHMI	21	24917	22.95	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.1	YES	NO	GOOD
222	VIDHYA	21	24564	23.01	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
223	SATHYAVANI	22	25090	24.88	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
224	KALEESHWARI	23	25055	22.44	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
225	NITHYA	24	25079	19.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.8	NO	NO	GOOD
226	CHITHRA	24	24429	19.84	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
227	SANTHANAMARIYAL	28	25063	20.31	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.3	NO	NO	GOOD
228	MALATHI	26	25019	24.54	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
229	SUBBU	23	25064	23.42	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
230	RADHA	29	25015	24	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	PRETERM	ALIVE	1.9	YES	NO	GOOD
231	KALESHWARI	28	24931	22.958	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	PRETERM	ALIVE	2	YES	NO	GOOD
232	ALAGAMAL	32	24949	22.44	low	no	MULTI	YES	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.3	NO	NO	GOOD
233	AYYAMAL	22	24936	20.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	ABRUPTIOI	NO	TERM	ALIVE	2.11	YES	NO	GOOD
234	SHANTHI	30	24988	21.77	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
235	PRIYA	20	25013	20.4	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
236	SHANTHI	29	24703	20.76	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD

237	MAHESHWARI	34	24552	22.66	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
238	KARTHIGA	22	24575	20.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.8	NO	NO	GOOD
239	LAKSHMI	35	24393	22.95	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
240	HASSEENBANU	23	24404	24.54	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
241	SHANTHI	29	244444	22.95	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.75	NO	NO	GOOD
242	MOOKAMAL	25	24437	21.09	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.3	NO	NO	GOOD
243	PODHUMPONNU	21	24527	22.22	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	ABRUPTIOI	NO	TERM	ALIVE	2.4	YES	NO	GOOD
244	SHANTHI	24	24832	20.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
245	JAQUELINE	28	24322	23.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
246	ULAGAMAL	25	24400	24.87	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	ABRUPTIOI	NO	TERM	ALIVE	1.9	YES	NO	GOOD
247	THOTICHI	28	24591	23.45	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
248	PANDEESHWARI	23	24678	24.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
249	CHELLAM	27	24537	19.55	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.25	YES	NO	GOOD
250	LATHA	24	24545	24.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
251	SAGARBANU	25	24386	23.4	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
252	DHANALAKSHMI	20	24433	20	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
253	CHINNAMAL	22	24205	22.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
254	NAGARATHNAM	26	24173	20.24	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
255	NITHYA	21	24477	23.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.6	NO	NO	GOOD
256	ALAGUJOTHI	19	23031	24.45	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
257	PRIYA	21	23064	23.54	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
258	DEVI	28	23084	21.63	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
259	PUSHPA	21	23107	22.65	low	no	primi	no	REGULAR	NO	mixed	NONE	outlet forceps	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
260	BHUVANESHWARI	26	23091	23.58	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.2	YES	NO	GOOD
261	POTHUMPONNU	24	23058	24.25	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
262	VIMALA	23	23061	23.26	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
263	VENDHAMAL	23	21963	21.85	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
264	CHANDRAKALA	27	22720	23.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
265	DURGADEVI	20	22525	23.25	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
266	PANDISELVI	25	22963	21.52	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
267	RANJINI	22	22836	23.54	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
268	PARVATHI	23	22690	22.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.2	YES	NO	GOOD
269	KAVITHA	25	23070	23.52	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
270	THIRUSELVI	23	23101	21.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
271	JAYALAKSHMI	20	23417	23.63	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
272	PANDIYAMMAL	22	23437	21.62	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
273	RAMALAKSHMI	23	23426	20.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
274	BHUMATHI	23	23324	19.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
275	MUTHURAKKU	27	23373	21.52	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
276	SATHYA	25	23561	23.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
277	SARANYA	22	23587	22.48	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.25	YES	NO	GOOD
278	MUTHULAKSHMI	23	23592	23.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	2.25	YES	NO	GOOD

279	NAGAJOTHI	29	23660	22.85	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
280	DEEPA	20	23483	21.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
281	MARIYAMMAL	22	23817	22.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
282	ATHEESHWARI	22	24557	23.98	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
283	VALARMATHY	22	24579	22.85	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	1.7	YES	NO	GOOD
284	DHANALAKSHMI	26	24688	17.15	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
285	SATHYA	21	24526	23.56	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
286	JANSIRANI	21	24485	22.57	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
287	RAJESHWARI	23	24717	23.98	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
288	KARTHIGAISELVI	23	24622	23.78	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	PE	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
289	UMA	21	24685	19.75	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.25	NO	NO	GOOD
290	RAJALAKSHMI	24	24699	23.98	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
291	CHANDRAKALA	22	24760	21.46	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	1.6	YES	NO	GOOD
292	SUSMITHA	19	24582	18.99	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
293	PASUPATHY	28	24563	21.56	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
294	GAYATHRI	26	24555	23.25	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
295	RADHA	23	24586	22.68	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
296	PANDIMEENA	25	23970	23.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
297	PANJAVARNAM	28	24602	21.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
298	RAMU	25	24618	22.89	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
299	MUTHULAKSHMI	29	24683	24.87	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
300	SUDALESHWARI	28	23606	23.5	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
301	AMBIKA	29	24796	24.66	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2	YES	NO	GOOD
302	MURUGESHWARI	23	24808	21.28	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
303	JEYA	22	24995	22.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	1.2	YES	NO	GOOD
304	MARUTHAIAMMAL	23	24355	24.4	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
305	VIJAYALAKSHMI	28	24093	23.19	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
306	MAHESHWARI	29	24027	24.66	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
307	MUTHUKUMARI	27	23927	20.9	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
308	LAKSHMI	24	22772	22.67	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
309	MALATHI	24	24108	24.01	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
310	GEETHA	24	23981	20.17	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
311	ASANBANUJ	26	23991	21.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.2	YES	NO	GOOD
312	JOTHIMANI	24	24048	24.07	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
313	UMAMAHESHWARI	27	23998	19.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
314	VIJAYALAKSHMI	24	24633	24.16	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	GDM	NO	NO	TERM	ALIVE	3.4	YES	NO	GOOD
315	LAKSHMI	24	24785	23.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
316	MAHESHWARI	28	24834	24.22	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
317	MAHALAKSHMI	28	24667	23.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2	YES	NO	GOOD
318	ESHWARI	23	24786	24.24	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
319	NAGAVALLI	23	24739	23.25	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
320	SUMATHI	27	24687	24.51	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD

321	MUTHULAKSHMI	27	24968	24.2	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
322	MALAR	20	24782	23.98	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
323	RUTHMARI	23	24797	24.24	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
324	ABINAYADEVI	20	24922	22.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.2	YES	NO	GOOD
325	PARAMESHWARI	20	24810	23.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
326	NAGALAKSHMI	35	25021	21.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
327	ARULJOTHI	26	24996	22.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	dead	3.2	NO	NO	GOOD
328	LAKSHMI	28	24754	23.98	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2	YES	NO	GOOD
329	MALAISELVI	28	24751	24.64	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	GDM	NO	NO	TERM	ALIVE	3.2	YES	NO	GOOD
330	MUTHUMARI	23	24791	23.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.3	YES	NO	GOOD
331	SAMSAMMA	20	24693	24.24	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	PE	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
332	MALLIGA	26	24870	21.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	1.7	YES	NO	GOOD
333	MALLIGA	20	24974	22.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.4	NO	NO	GOOD
334	VIJAYALAKSHMI	24	24676	21.93	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
335	SUMATHI	22	25031	24.2	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
336	KARTHIGA	23	24933	23.92	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	1.5	YES	NO	GOOD
337	PREMA	20	24903	22.92	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.1	YES	NO	GOOD
338	REVATHI	20	24481	21.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	1.75	YES	NO	GOOD
339	SHAKILABANU	22	24841	23.54	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	1.75	YES	NO	GOOD
340	VIJAYALAKSHMI	23	24044	22.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
341	SHINAZBANU	20	24906	23.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3	NO	NO	GOOD
342	KHAVITHA	20	24891	22.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.1	YES	NO	GOOD
343	THOTICHI	21	24897	21.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
344	SUGANYADEVI	19	24686	24.25	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.75	NO	NO	GOOD
345	KRISTIMARI	25	24231	22.96	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
346	RAJI	25	24809	24.36	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
347	MAITHEENFATHIMA	28	25086	21.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
348	AMIRTHAM	22	24421	22.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
349	PETCHIAMMAL	24	24383	23.96	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
350	NAGAVALLI	21	25067	24.64	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
351	THAMARAIVANI	25	25077	23.52	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
352	SUGAANYA	22	25075	22.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
353	ALAGUSUNDARI	24	25030	21.92	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
354	DHANALAKSHMI	30	25083	23.96	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
355	NAGARANI	19	25068	22.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
356	SUGANYYA	22	24928	20.54	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
357	BOOMADEVI	22	24961	21.69	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	1.5	YES	NO	GOOD
358	ABIRAMI	25	24977	23.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
359	MANJULA	21	24969	24.24	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
360	SHARMILADEVI	27	24934	22.36	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
361	VANAJA	20	25614	20.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
362	SUMATHI	25	24463	19.98	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD

363	CHITHRAISELVI	22	25011	23.98	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	1.75	YES	NO	GOOD
364	LAKSHMI	21	24489	22.68	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
365	JOTHIMANI	24	24048	21.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
366	MAHALAKSHMI	20	24558	23.86	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.7	NO	NO	GOOD
367	PANDEESHWARI	27	24442	22.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.9	NO	NO	GOOD
368	SASIKALA	22	24533	20.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
369	AMSAVALLI	24	24484	23.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
370	MEENA	24	24198	24.24	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
371	INDRA	24	24516	22.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
372	CHINNAMAL	30	24573	23.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
373	PANCHAVARNAM	23	24227	24.68	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
374	SULTHANIYAPARVEEN	32	24135	22.45	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
375	MALATHI	26	24469	24.86	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
376	KALEESHWARI	24	24525	23.65	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
377	IRULAYE	21	24475	24.32	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
378	ALAGESHWARI	24	24706	21.54	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
379	REVATHI	24	24497	22.43	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
380	GANDHIMATHI	32	24913	24.12	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
381	CHANDRA	28	24212	23.32	low	no	MULTI	no	REGULAR	NO	mixed	NONE	REPEAT LSCS	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
382	BOOMADEVI	20	24652	24.22	low	no	primi	no	REGULAR	NO	mixed	NONE	LSCS	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
383	CHINNAKATHI	25	11694	22.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.5	NO	NO	GOOD
384	KAVITHA	26	11700	23.87	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
385	SARASWATHI	25	11820	24.12	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
386	JEYAMANI	21	11666	22.98	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
387	MANIMALA	19	11727	22.54	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
388	RAKKU	26	11618	21.87	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.5	NO	NO	GOOD
389	RATHIMANI	22	11858	23.56	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
390	MAHADEVI	22	11853	22.8	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
391	CHINNAPANDIAMMA	32	11921	21.65	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
392	PUSHPAM	25	11812	24.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
393	KALEESHWARI	20	12224	20.68	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.8	NO	NO	GOOD
394	VIDHYAKALA	23	12232	22.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
395	PALANIAMMAL	20	12230	23.68	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.1	NO	NO	GOOD
396	SAKUNTHALA	24	12262	24.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	3.2	NO	NO	GOOD
397	PRIYANKA	22	12303	22.44	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
398	SAKTHI	23	12296	23.24	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.6	NO	NO	GOOD
399	SURYABANU	21	12247	22.88	low	no	MULTI	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD
400	ROSHAN	22	12484	24.33	low	no	primi	no	REGULAR	NO	mixed	NONE	LN	NO	NO	NO	TERM	ALIVE	2.4	NO	NO	GOOD

PE - Pre Eclampsia
GDM - Gestational Diabetes Mellitus
PPH - Postpartum Haemorrhage
LN - Labour Natural
PDA - Patent Ductus Arteriosus
LRI - Lower Respiratory Tract Infection
BMI-Body mass index.
LSCS - Lower Segment Cesarean Section